

Part III

HIV PEPTIDE-REACTIVE MONOCLONAL ANTIBODIES

How to Use Part III:

Table of HIV-Specific Antibody-Peptide Reactivity

This section is an annotated table that summarizes monoclonal antibodies (MAb) with defined reactivity to peptides in HIV-1 proteins. Many of these epitopes have conformational components, but they are linear in the sense that they can react with a short linear peptide. MAbs that did not interact with linear peptides are not included in this table; in subsequent editions of this database we hope to include summaries of these MAbs as well. This section is organized by protein, with peptides listed according to their location, going from the N-terminal to C-terminal ends. Each MAb has a seven-part basic entry:

- **1) Location:** The amino acid positions that the reactive peptide spans and the sequence identification that was used as a basis for the peptide's sequence. The numbers are listed as found in the referenced papers – frequently, these numbers as published are imprecise, and do not truly correspond to the numbering of the sequence, but they provide a reasonable guide to the peptide's approximate location in the protein. In many cases the sequence identification was not provided. Also, some reports gave slightly different boundaries for linear epitopes. We tended to list the minimal epitopes, and we tried to note discrepancies. (A very useful standard for future papers in this field would be to always include the exact amino acids of linear epitopes in primary articles, as well as the position numbers and the name of the reference sequence. This way epitope boundaries will be clear even if the numbering of the authors, or the readers, is not correct. Often either the position number or the sequence, not both, are included in the current literature.)
- **2) Name:** The name of the monoclonal antibody.
- **3) MAb:** Verification (y or n) that the Ab being considered is monoclonal; a few of the epitopes listed were defined on the basis of reaction with affinity purified sera and not monoclonals.
- **4) NAb:** Indicates if neutralizing activity has been reported for a MAb. P = primary isolate neutralization, L = lab strain neutralization, n = no neutralization, and ? = no data. This column was only included for gp120 and gp41 epitopes. There are distinctions between different neutralization assays; we ask database users to go to the primary literature to interpret the strength of the reported conclusions.
- **5) Peptide:** If overlapping peptides were able to interact with a monoclonal MAb, the region of overlap generally is given. Thus the epitopes listed are the central to the binding domain, but antibody binding may certainly be influenced by mutations beyond the boundaries of the peptides given.

HIV Peptide-Reactive Monoclonal Antibodies

- **6) Immunogen:** The initial stimulus for the MAb is listed. In some cases it is infection, in others, vaccination.
- **7) Species(isotype):** The species of the source of the MAb, and the isotype information when available. Very occasionally, there were differences in the reported isotype. If this was the case, we included the designation from the primary reference in which the isotype was determined.

Following each entry for a given MAb, there is a list of references, indicated by an open circle (○), listing studies that have included the MAb. This is followed by very brief comments that describe the context of a study that included a given antibody, or salient molecular information about the epitope. Each comment is indicated by a filled circle (●). Not all papers have accompanying comments. Many of those that do not either describe the first isolation of the monoclonal, or define the basic parts of each entry (peptide reactivity, isotype...). Also, in some cases, reports have conflicting conclusions. In this database, we have attempted to faithfully represent what authors describe in their publications. Contradictory comments extracted from different sources should be considered in the context of the primary publications – only then can distinctions between experimental methodology and study design be fully appreciated.

If you are aware of important studies that are not represented in this table, please notify Bette Korber at the Los Alamos database, so they might be included next year. We would be very grateful for any reprints or preprints that could be sent. A few HIV-2 and SIV epitopes or cross-reactivities are documented here, but we have focused on HIV-1 for the present.

p17 Antibody-Peptide Reactivity

Location	Name	MAb	Peptide	Immunogen	Species(isotype)
		○ References			
		● Comments			
p17(12-19 IIIB)	32/5.8.42	y	ELDRWEKI	Viral lysate	murine(IgG)
		○ [Papsidero et al.(1989)]			
		● 32/5.8.42: Inhibited infectivity of cell free virus; also bound ALDKIE, positions 100-105 [Papsidero et al.(1989)]			
p17(11-25 BRU)	L14.17	y	GELDRWEKIRLRPGG	Inactivated BRU	murine(IgG)
		○ [Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a), Tatsumi et al.(1990)]			
p17(17-22 IIIB)	32/1.24.89	y	EKIRLR	Viral lysate	murine(IgG)
		○ [Papsidero et al.(1989)]			
		● 32/1.24.89 Inhibited infectivity of cell free virus [Papsidero et al.(1989)]			
p17(51-65)	10A-B4f8	y	LETSEGCRQILGQLQ	IIIB lysate	rat(IgG _{2a})
		○ [Shang et al.(1991)]			
		● 10A-B4f8: Did not bind live infected cells, only cells that had been permeabilized with acetone [Shang et al.(1991)]			
p17(62-78)	12H-D3b3	y	GQLQPSLQTGSEELRSL	IIIB lysate	rat(IgG _{2a})
		○ [Shang et al.(1991)]			
		● 12H-D3b3: Did not bind live infected cells, only cells that had been permeabilized with acetone [Shang et al.(1991)]			
p17(86-115)	12G-A8g2	y	YCVHQRIEKDTKEALDKIEEEQNKSKKKA	HIV-1 IIIB lysate	rat(IgG _{2a})
		○ [Shang et al.(1991)]			
p17(86-115)	12G-D7h11	y	YCVHQRIEKDTKEALDKIEEEQNKSKKKA	HIV-1 IIIB lysate	rat(IgG _{2a})
		○ [Shang et al.(1991)]			
p17(86-115)	12I-D12g2	y	YCVHQRIEKDTKEALDKIEEEQNKSKKKA	HIV-1 IIIB lysate	rat(IgG _{2a})
		○ [Shang et al.(1991)]			
p17(86-115)	12G-H1c7	y	YCVHQRIEKDTKEALDKIEEEQNKSKKKA	HIV-1 IIIB lysate	rat(IgG)
		○ [Shang et al.(1991)]			
		● 12G-A8g2, 12G-D7h1, 12I-D12g2, and 12G-H1c7: all bound to 30-mer, but not internal peptides; didn't bind live infected cells [Shang et al.(1991)]			

p17 Antibody-Peptide Reactivity

Location	Name	MAb	Peptide	Immunogen	Species(isotype)
			◦ References		
			• Comments		
p17(100-105 IIIB)	32/5.8.42	y	ALDKIE	Viral lysate	murine(IgG)
			◦ [Papsidero et al.(1989)]		
			• 32/5.8.42: Inhibited infectivity of cell free virus; also bound ELDRWEKI, positions 12-19 [Papsidero et al.(1989)]		
p17(113-122 HXB2)	C5126	y	KKAQQAAADT	Inactivated HIV lysate	murine(IgG ₁ _κ)
			◦ [Hinkula et al.(1990)]		
			• C5126: Defined by peptide blocking of binding to native protein; WB reactive with p53 and p17 [Hinkula et al.(1990)]		
p17(113-122 BH10)	3-H-7	y	KKAQQAAADT	IIIB virus	murine(IgG)
			◦ [Niedrig et al.(1989), Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a)]		
			• 3-H-7: No cross-reactivity with HIV-2 ROD or SIV MAC by immunoblot [Niedrig et al.(1989)]		
p17(121-132 BRU)	31-11	y	DTGHSSQVSQNY	HIV1 BRU	murine(IgG)
			◦ [Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a)]		
p17(121-132 BRU)	15-21	y	DTGHSSQVSQNY	HIV1 BRU	murine(IgG)
			◦ [Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a)]		

p24 Antibody-Peptide Reactivity

Location	Name	MAb	Peptide	Immunogen	Species(isotype)
	o References				
	• Comments				
p24(14-23 HXB2)	F5-2	y	AISPRTLNAW	?	murine
	o [Kusk et al.(1988), Kusk et al.(1992)]				
	• F5-2: In HIV-1+ individuals, antibody to AISPRTLNAW is associated with CD4 T-cell decline [Kusk et al.(1988), Kusk et al.(1992)]				
p24(122-149 BH10)	3A6	y	TGHSSQVSQNYPIVQNIQGQMVKHQAIISP	HIV-1 infection	human(IgG ₁ (κ))
	o [Buchacher et al.(1992), Buchacher et al.(1994)]				
	• 3A6: Human MAbs against HIV generated by electrofusion of PBLs from HIV-1 positive volunteers with CB-F7 cells [Buchacher et al.(1994)]				
p24(134-153 IIIB)	111/182	y	PIVQNIQGQMVKHQAIISPRTL	IIIB p24-β-gal fusion	murine(IgG ₁)
	o [Niedrig et al.(1991)]				
p24(134-153 IIIB)	112/021	y	PIVQNIQGQMVKHQAIISPRTL	IIIB p24-β-gal fusion	murine(IgG ₁)
	o [Niedrig et al.(1991)]				
p24(134-153 IIIB)	112/047	y	PIVQNIQGQMVKHQAIISPRTL	IIIB p24-β-gal fusion	murine(IgG ₁)
	o [Niedrig et al.(1991)]				
	• 111/182, 112/021, and 112/047: test specific evidence of cross-reactivity between HIV-1, HIV-2 and SIV MAC, with some assays it was clear, with others it was not [Niedrig et al.(1991)]				
p24(152-156)	CB-mab-p24/13-15	y	NAWK	?	murine(IgG ₁ κ)
	o [Kuttner et al.(1992), Grunow et al.(1990)]				
	• CB-mab-p24/13-15: Sequences spanning the VDJ _H and VJ _L regions of CB-mab-p24/13-15 [Kuttner et al.(1992)]				
p24(153-174 HXB2)	F5-4	y	IRQGPKEPFRDYVDRFYKTLRAE	?	murine
	o [Kusk et al.(1992), Kusk et al.(1988)]				
	• F5-4: Located in the most hydrophilic region of p24 [Kusk et al.(1992), Kusk et al.(1988)]				
p24(183-192 IIIB)	111/052	y	DLNTMLNTVG	IIIB p24-β-gal fusion	murine(IgG ₁)
	o [Niedrig et al.(1991)]				
	• Weak cross-reaction with HIV-2 on Western blot, otherwise not cross-reactive with HIV-2 or SIV MAC [Niedrig et al.(1991)]				

p24 Antibody-Peptide Reactivity

Location	Name	MAb	Peptide	Immunogen	Species(isotype)
	○ References				
	● Comments				
p24(201-218 BRU)	47-2	y	LKETINEAAEWD ^R VHPV	HIV-1 BRU	murine(IgG)
	○ [Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a)]				
p24(201-218 BRU)	14D4E11	y	LKETINEAAEWD ^R VHPV	IIIB p25	murine(IgG)
	○ [Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a), Janvier et al.(1990)]				
p24(201-218 BRU)	714/01	y	LKETINEAAEWD ^R VHPV	IIIB virus	murine(IgG)
	○ [Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a)]				
p24(201-218 BRU)	1109/01	y	LKETINEAAEWD ^R VHPV	IIIB virus	murine(IgG)
	○ [Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a)]				
p24(201-218 BRU)	1G5C8	y	LKETINEAAEWD ^R VHPV	IIIB virus	murine(IgG)
	○ [Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a), Janvier et al.(1990)]				
p24(203-213 IIIB)	113/038	y	ETINEAAEWD	IIIB p24-β-gal fusion	murine(IgG ₁)
	○ [Niedrig et al.(1991)]				
p24(203-213 IIIB)	111/073	y	ETINEAAEWD	IIIB p24-β-gal fusion	murine(IgG ₁)
	○ [Niedrig et al.(1991)]				
	● 113/038 and 111/073: are cross-reactive between HIV-1, HIV-2 and SIV MAC by multiple assays [Niedrig et al.(1991)]				
p24(213-222 IIIB)	113/072	y	DRVHPVHAGP	IIIB p24-β-gal fusion	murine(IgG ₁)
	○ [Niedrig et al.(1991)]				
	● 113/072: Weak cross-reaction with HIV-2 on WB, otherwise not cross-reactive with HIV-2 or SIV MAC [Niedrig et al.(1991)]				
p24(203-217)	1-E-4	y	ETINEAAEWD ^R VHP	IIIB virus	murine(IgG)
	○ [Niedrig et al.(1989)]				
p24(203-217)	2-E-4	y	ETINEAAEWD ^R VHP	IIIB virus	murine(IgG _{2a})
	○ [Niedrig et al.(1989), Niedrig et al.(1988)]				
	● 2-E-4: Cross reactive between HIV-2, HIV-2 and SIV by ELISA, HIV-1 and HIV-2 by WB [Niedrig et al.(1988)]				

p24 Antibody-Peptide Reactivity

Location	Name	MAb	Peptide	Immunogen	Species(isotype)
		o References			
		• Comments			
p24(203-217)	2-H-4	y	ETINEAAEDRVHP	IIIB virus	murine(IgG ₁)
		• 2-H-4: Cross reactive between HIV-2, HIV-2 and SIV by ELISA, HIV-1 and HIV-2 by WB [Niedrig et al.(1988)]			
		o [Niedrig et al.(1989), Niedrig et al.(1988)]			
p24(203-217)	8-D-2	y	ETINEAAEDRVHP	IIIB virus	murine(IgG _{2a})
		• 8-D-2: HIV-1 specific [Niedrig et al.(1988)]			
		o [Niedrig et al.(1989), Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a)]			
p24(203-217)	8-H-7	y	ETINEAAEDRVHP	IIIB virus	murine(IgG ₃)
		o [Niedrig et al.(1988), Niedrig et al.(1989), Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a)]			
p24(203-217)	8-G-9	y	ETINEAAEDRVHP	IIIB virus	murine(IgG)
		o [Niedrig et al.(1989)]			
p24(203-217)	10-E-7	y	ETINEAAEDRVHP	IIIB virus	murine(IgG ₁)
		o [Niedrig et al.(1989), Niedrig et al.(1988)]			
		• 10-E-7: Cross reactive between HIV-2, HIV-2 and SIV [Niedrig et al.(1988)]			
		o [Niedrig et al.(1989)]			
p24(203-217)	10-G-9	y	ETINEAAEDRVHP	IIIB virus	murine(IgG ₁)
		o [Niedrig et al.(1989), Niedrig et al.(1988)]			
		• 10-G-9: HIV-1 specific [Niedrig et al.(1988)]			
p24(203-217)	11-C-5	y	ETINEAAEDRVHP	IIIB virus	murine(IgG ₁)
		o [Niedrig et al.(1989), Niedrig et al.(1988)]			
		• 11-C-5: HIV-1 specific [Niedrig et al.(1988)]			
		o [Niedrig et al.(1989)]			
		• 1-E-4, 1-E-9, 2-E-4, 2-H-4, 8-D-2, 8-H-7, 8-G-9, 10-E-7, 10-G-9, and 11-C-5: Nine MAbs interact with this peptide; 2-E-4, 2-H-4, and 10-E-7 were cross-reactive with HIV-2 ROD; 10-E-7 was also cross reactive with SIV MAC [Niedrig et al.(1989)]			

p24 Antibody-Peptide Reactivity

Location	Name	MAb	Peptide	Immunogen	Species(isotype)
	o References				
	• Comments				
p24(203-217 HXB2)	C5123	y	ETINEEAAEWDRVHP	Inactivated HIV lysate	murine(IgG ₁ _κ)
	o [Hinkula et al.(1990)]				
	C5123: Epitope defined by pept. blocking of binding to native protein; WB reactive with p53 and p24 [Hinkula et al.(1990)]				
p24(208-217 BH10)	1-B-7	y	EAAEWDRVHP	IIIB	murine(IgG ₁)
	o [Niedrig et al.(1989), Niedrig et al.(1988)]				
p24(208-217 BH10)	3-B-7	y	EAAEWDRVHP	IIIB	murine(IgG ₁)
	o [Niedrig et al.(1989), Niedrig et al.(1988)]				
p24(208-217 BH10)	6-D-12	y	EAAEWDRVHP	IIIB	murine(IgG ₁)
	o [Niedrig et al.(1989), Niedrig et al.(1988)]				
p24(208-217 BH10)	6-E-7	y	EAAEWDRVHP	IIIB	murine(IgG ₁)
	o [Niedrig et al.(1989), Niedrig et al.(1988)]				
p24(208-217 BH10)	8-D-5	y	EAAEWDRVHP	IIIB	murine(IgG)
	o [Niedrig et al.(1989), Niedrig et al.(1988)]				
	• 1-B-7, 3-B-7, 6-D-12, 6-E-7, and 8-D-5: react with two overlapping peptides; the region of overlap is given; 8-D-5 bound only HIV-1;				
	3-B-7, 6-D-12, 6-E-7, and 1-B-7 cross-reacted with HIV-2;				
	1-B-7 and 6-E-7 also reacted with SIV MAC [Niedrig et al.(1989)]				
p24(208-222 HXB2)	FF1	y	EAAEWDRVHPVHAGP	Inactivated HIV	murine(IgG ₁ _κ)
	o [Hinkula et al.(1990)]				
	• FF1: Epitope defined by pept. blocking of binding to native protein; WB reactive with p53 and p24 [Hinkula et al.(1990)]				
p24(219-233 BRU)	RL4.72.1	y	HAGPIAPGQMREPRG	NDK	murine(IgG)
	o [Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a), Tatsumi et al.(1990)]				
	• RL4.72.1: Immunized with inactivated HIV NDK, D clade, reacts with B clade peptide [Robert-Hebmann et al.(1992a)]				

p24 Antibody-Peptide Reactivity

Location	Name	MAb	Peptide	Immunogen	Species(isotype)
	○ References				
	● Comments				
p24(233-253 BRU)	406/01	y	GSDIAGTTSTLQEIQIGWMTNN	IIIB	murine(IgG)
	○ [Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a)]				
p24(253-262 HXB2)	38:9.6K	y	NPPIPVGEIY	rec p24-15	murine(IgG _{1κ})
	○ [Hinkula et al.(1990)]				
	● 38:9.6K: Epitope defined by peptide blocking of binding to native protein; WB reactive with p53 and p24 [Hinkula et al.(1990)]				
p24(275-280 BRU)	LH-104-E	y	RMYSPT	Peptide	murine(IgG _{1κ})
	○ [Haaheim et al.(1991)]				
	● LH-104-E: Reacts with both p24 and p55 [Haaheim et al.(1991)]				
p24(281-286 BRU)	LH-104-K	y	SILDIR	Peptide	murine(IgG _{1κ})
	○ [Haaheim et al.(1991)]				
	● LH-104-K: Binds exclusively with p24 (not p55) [Haaheim et al.(1991)]				
p24(285-304 BRU)	23A5G5	y	IRQGPKEPFRDYVDRFYKTL	IIIB p25	murine(IgG)
	○ [Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a), Janvier et al.(1990)]				
p24(285-310 BRU)	MO9.42.2	y	IRQGPKEPFRDYVDRFYKTLRAEQAS	HIV2 ROD	murine(IgG)
	○ [Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a)]				
p24(285-310 BRU)	MO9.50.2	y	IRQGPKEPFRDYVDRFYKTLRAEQAS	HIV2 ROD	murine(IgG)
	○ [Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a)]				
	● MO9.42.2 and MO9.50.2: Reacts with HIV-1s, HIV-2s, and SIVs in rec protein ELISA [Robert-Hebmann et al.(1992b)]				
p24(289-303 IIIB)	V10	y	QGPKEPFRDYVDRFY	virion	murine
	○ [Matsuo et al.(1992)]				
	● V10: Reacts with HIV-1 and SIV _{AGM} analogous peptides [Matsuo et al.(1992)]				
p24(289-311 IIIB)	V107	y	QGPKEPFRDYVDRFYKTLRAEQA	Virion	murine
	○ [Matsuo et al.(1992)]				
	● V107: Reacts with FIV, HIV-1 and SIV _{AGM} analogous peptides [Matsuo et al.(1992)]				

p24 Antibody-Peptide Reactivity

Location	Name	MAb	Peptide	Immunogen	Species(isotype)
			◦ References		
			• Comments		
p24(293-302 BH10)	12-B-4	y	FRDYVDRFYK	IIIB virus	murine(IgG ₁)
			◦ [Niedrig et al.(1989), Niedrig et al.(1988)]		
			• 12-B-4: Overlap between two HIV-1 reactive peptides; cross-reacts with HIV-2 ROD and SIV MAC		
p24(293-302 HXB2)	C5122	y	FRDYVDRFYK	Inactivated HIV lysate	murine(IgG _{1κ})
			◦ [Hinkula et al.(1990)]		
			• C5122: Defined by peptide blocking of binding to native protein; WB reactive with p53 and p24 [Hinkula et al.(1990)]		
p24(302-320 BRU)	9A4C4	y	KTLRAEQASQEVKNWMTET	IIIB p25	murine
			◦ [Robert-Hebmann et al.(1992b), Robert-Hebmann et al.(1992a), Janvier et al.(1990)]		
p24(308-322 HXB2)	BE3	y	QASQEVKNWMTETLL	rec p24-15	murine(IgG _{1κ})
			◦ [Hinkula et al.(1990)]		
			• BE3: Defined by peptide blocking of binding to native protein; WB reactive with p53 and p24 [Hinkula et al.(1990)]		
p24(308-322 HXB2)	L14	y	QASQEVKNWMTETLL	rec p24-15	murine(IgG _{1κ})
			◦ [Hinkula et al.(1990)]		
			• L14: Defined by peptide blocking of binding to native protein; WB reactive with p53 and p24 [Hinkula et al.(1990)]		
p24(313-322 IIIB)	110/015	y	VKNWMTETLL	IIIB p24-β-gal fusion	murine(IgG ₁)
			◦ [Niedrig et al.(1991)]		
p24(313-322 IIIB)	108/03	y	VKNWMTETLL	IIIB p24-β-gal fusion	murine(IgG ₁)
			◦ [Niedrig et al.(1991)]		
			• 110/015 and 108/03: Cross-reactive between HIV-1, HIV-2 and SIV MAC by multiple tests [Niedrig et al.(1991)]		
p24(333-347 HXB2)	FH2	y	ILKAL GPAATLEEMM	rec p24-15	murine(IgG _{1κ})
			◦ [Hinkula et al.(1990)]		
			• FH2: Defined by peptide blocking of binding to native protein; WB reactive with p53 and p24 [Hinkula et al.(1990)]		
p24(343-362 IIIB)	106/01	y	LEEMMTACQGVGGPGHKARV	IIIB p24-β-gal fusion	murine(IgG ₁)
			◦ [Niedrig et al.(1991)]		
			• 106/01: Cross-reactive between HIV-1, HIV-2 and SIV MAC by multiple tests [Niedrig et al.(1991)]		

p24 Antibody-Peptide Reactivity

Location	Name	MAb	Peptide	Immunogen	Species(isotype)
p24(357-362 BRU)	LH-104-B	y	GHKARV	Peptide	murine(IgG _{1κ})
	o References				o [Haaheim et al.(1991)]
	• Comments				• LH-104-B: Binds exclusively with p55 (not p24), in contrast to LH-104-I [Haaheim et al.(1991)]
p24(358-363 BRU)	LH-104-I	y	HKARVL	Peptide	murine(IgG _{1κ})
	o References				o [Haaheim et al.(1991)]
	• Comments				• LH-104-I: Binds exclusively with p24 (not p55), in contrast to LH-104-B [Haaheim et al.(1991)]
p24(363-368 BRU)	LH-104-G	y	LAEAMS	Peptide	murine(IgG _{1κ})
	o References				o [Haaheim et al.(1991)]
	• Comments				• LF-104-G: Reacts with both p24 and p55 [Haaheim et al.(1991)]

p7-p15 Antibody-Peptide Reactivity

Location	Name	MAb	Peptide	Immunogen	Species(isotype)
	o References				
	• Comments				
p7(1-14)	15B11	y	MQRGNFRNQRKIVK	Peptide	murine
	o [Otake et al.(1994)]				
p7(1-14)	i5B11	y	MQRGNFRNQRKIVK	purified NCp7	rat(IgG _{2a})
	o [Tanchou et al.(1994)]				
	• i5B11: epitope mapped by ELISA and BIACore; inhibits NCp7 primer tRNA binding [Tanchou et al.(1994)]				
p7(52-67)	HH3	y	RQANFLGKIWPSYKGR	purified NCp7	murine(IgG _{2b})
	o [Tanchou et al.(1994)]				
p7(64-80)	JF11	y	YKGRPGNFLQSRPEPTA	purified NCp7	murine(IgG ₁)
	o [Tanchou et al.(1994)]				
	• HH3 and JF11: epitopes mapped by ELISA and BIACore; they do not inhibit NCp7 primer tRNA binding [Tanchou et al.(1994)]				
p15(408-417 HXB2)	EC6	y	PRKKGCWKCG	rec p24-15	murine(IgG _{2a})
	o [Hinkula et al.(1990)]				
	• Epitope defined by peptide blocking of binding to native protein; WB reactive with p53 [Hinkula et al.(1990)]				
p15(408-417 HXB2)	M12	y	PRKKGCWKCG	rec p24-15	murine(IgG ₁)
	o [Hinkula et al.(1990)]				
	• Epitope defined by peptide blocking of binding to native protein; WB reactive with p53 [Hinkula et al.(1990)]				

Protease Antibody-Peptide Reactivity

Location	Name	MAb	Peptide	Immunogen	Species(isotype)
			o References		
			• Comments		
pro(38-45 HXB2)	8G5	y	LPGRWPKPK	rec Protease	hamster(IgG)
			o [Croix et al.(1993)]		
pro(38-45 HXB2)	13E1	y	LPGRWPKPK	rec Protease	hamster(IgG)
			o [Croix et al.(1993)]		
pro(38-45 HXB2)	8B11	y	LPGRWPKPK	rec Protease	hamster(IgG)
			o [Croix et al.(1993)]		
pro(38-45 HXB2)	8C10	y	LPGRWPKPK	rec Protease	hamster(IgG)
			o [Croix et al.(1993)]		
			• 8G5, 13E1, 8B11, 8C10: bind MSLPGRWPKPM with slightly higher affinity [Croix et al.(1993)]		
pro(38-45 HXB2)	10E7	y	MSLPGRWPKPM	rec Protease	hamster(IgG)
			o [Croix et al.(1993)]		
			• 10E7: offset binding relative to other 4 MAbs in the Croix study; MSLPGRWKP blocks binding Protease [Croix et al.(1993)]		

RT Antibody-Peptide Reactivity

Location	Name	MAb	Peptide	Immunogen	Species(isotype)
	o References				
	• Comments				
RT(294-302)	1.152 B3	y	PLTEEAELE	Purified cloned RT	murine(IgG ₁)
	o [Orvell et al.(1991)]				
	• 1.152 B3: Weakly positive by immunofluorescence; binding inhibits RT enzymatic activity [Orvell et al.(1991)]				
RT(294-302)	1.158 E2	y	PLTEEAELE	Purified cloned RT	murine(IgG ₁)
	o [Orvell et al.(1991)]				
	• 1.158 E2: Negative by immunofluorescence; binding inhibits RT enzymatic activity [Orvell et al.(1991)]				
RT(294-319)	31D6	y	PLTEEAELAENREILKEPVHGKY	E. coli TrpE RT fusion protein	murine(IgG ₁)
	o [Szilvay et al.(1992)]				
	• 31D6: Strong inhibitor of RT, > 50% inhibition [Szilvay et al.(1992)]				
RT(294-319)	31G8	y	PLTEEAELAENREILKEPVHGKY	E. coli Trp RT fusion protein	murine(IgG ₁)
	o [Szilvay et al.(1992)]				
RT(294-319)	32E7	y	PLTEEAELAENREILKEPVHGKY	E. coli Trp RT fusion protein	murine(IgG ₁)
	o [Szilvay et al.(1992)]				
RT(294-319)	33D5	y	PLTEEAELAENREILKEPVHGKY	E. coli Trp RT fusion protein	murine(IgG ₁)
	o [Szilvay et al.(1992)]				
RT(294-319)	5B2	y	PLTEEAELAENREILKEPVHGKY	E. coli Trp RT fusion protein	murine(IgG ₁)
	o [Szilvay et al.(1992)]				
	• 31G8, 32E7, 33D5 and 5B2: Weak inhibitors of RT, reactive by immunofluorescence [Szilvay et al.(1992)]				
RT(295-304 PV22)	?	y	LTEEAELELA	Human infection	human(IgG)
	o [Grimison & Laurence(1995)]				
RT(350-354)	1.153 G10	y	KTGKY	Purified cloned RT	murine(IgG ₁)
	o [Orvell et al.(1991)]				
RT(442-450)	1.160 B3	y	VDGAANRET	Purified cloned RT	murine(IgG ₁)
	o [Orvell et al.(1991)]				

RT Antibody-Peptide Reactivity

Location	Name	MAb	Peptide	Immunogen	Species(isotype)
				○ References	
				● Comments	
RT(521-531 PV22)	?	y	IIEQLIKKEKV	Human infection	human(IgG)
			○ [Grimison & Laurence(1995)]		
RT(532-539)	RTMAb8	y	TTESIVIW	rec RT	murine(IgG)
			○ [Ferns et al.(1991), Tisdale et al.(1988)]		
RT(540-543)	RT6H	y	GKIP	rec RT	murine(IgG)
			○ [Ferns et al.(1991)]		
RT(540-543)	1D4A3	y	GKIP	rec RT	murine(IgG)
			○ [Ferns et al.(1991)]		
			● RTMAb8, RT6H, and 1D4A3: estimate of binding regions based on numbering of HXB2 [Ferns et al.(1991)]		
RT(703-716 BH10)	C2003	y	VPAHKIGGGNEQVD	Peptide	rabbit(IgG)
			○ [DeVico et al.(1991)]		
			● C2003: Inhibits polymerase activity from a variety of retroviruses;		
			RT can be protected from inhibition by preincubation with template primer [DeVico et al.(1991)]		

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp120(30-51 LAI)	M85	y	n	ATEKLWVTVYYGVPVWKEATT	HIV-1 451 env	murine(IgG ₁)
	o [Moore et al.(1994b), di Marzo Veronese et al.(1992), Moore et al.(1994c)]					
	• M85: C1 domain; mutation 40 Y/D impairs binding; the relative affinity for denatured/native gp120 is < .01 [Moore et al.(1994b)]					
	• M85: Immunoblot and RIP reactive for strains IIIB, 451, MN, RF, and RUTZ; binds deglycosylated gp120 [di Marzo Veronese et al.(1992)]					
gp120(31-50 LAI)	7E2/4	y	?	TEKLWVTVYYGVPVWKEATT	env glycoprotein	murine(IgG)
	o [Moore et al.(1994b)]; Donor: S. Ranjbar, NIBSC, UK					
	• 7E2/4: C1 domain; the relative affinity for denatured/native gp120 is .07 [Moore et al.(1994b)]					
gp120(31-50 LAI)	M92	y	n	GVPVWKEATT	HIV-1 451 env	rat(IgG ₁)
	o [Moore et al.(1994b), di Marzo Veronese et al.(1992), Moore et al.(1994c)]					
	• M92: The relative affinity for denatured/native gp120 is 1 [Moore et al.(1994b)]					
	• M92: Immunoblot reactive, RIP negative, but precipitates deglycosylated gp120;; reacts with strains IIIB, 451, MN, RF, and RUTZ [di Marzo Veronese et al.(1992)]					
gp120(31-50 LAI)	4D4#85	y	?	GVPVWKEATT	envelope	murine(IgG)
	o [Moore et al.(1994b), Moore et al.(1994c)]; Donor: S. Nigida, NCI, USA					
	• 4D4#85: The relative affinity, denatured/native gp120 is 0.1; mutation 45 W/S impairs binding [Moore et al.(1994b)]					
gp120(42-61 LAI)	M86	y	n	VPVWKEATTTLFCASDAKAY	HIV-1 451 env	murine(IgG ₁)
	o [Moore et al.(1994b), di Marzo Veronese et al.(1992)]					
	• M86: C1 domain; the relative affinity for denatured/native gp120 is 1 [Moore et al.(1994b)]					
	• M86: Immunoblot and RIP reactive for strains IIIB, 451, MN, RF, and RUTZ binds deglycosylated gp120 [di Marzo Veronese et al.(1992)]					
gp120(64-78)	133/11	y	L	EVHNVWATHACVPTD	IIIB gp120	murine(IgG ₁)
	o [Niedrig et al.(1992)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	○ References					
	● Comments					
gp120(51-70 LAI)	133/237	y	L	YDTEVHNWVA	IIIB gp120	murine(IgG ₁)
	○ [Moore et al.(1994b), Niedrig et al.(1992), Moore et al.(1994c)]					
	● 133/237: Region of overlap for reactive peptides is WATHA [Niedrig et al.(1992)]					
	● 133/237: The relative affinity, denatured/native gp120 is 1.4;					
	mutation of position 69 W/L impairs binding [Moore et al.(1994b)]					
gp120(51-70 LAI)	133/290	y	L	YDTEVHNWVA	IIIB gp120	murine(IgG ₁)
	○ [Moore et al.(1994b), Niedrig et al.(1992), Moore et al.(1994c)]					
	● 133/290: The relative affinity for denatured/native gp120 is 2.2;					
	mutation in position 69 W/L impairs binding [Moore et al.(1994b)]					
gp120(81-90 LAI)	4A7C6	y	?	PQEVLVNVNT	env glycoprotein	murine(IgG)
	○ [Moore et al.(1994b), Thiriart et al.(1989), Moore et al.(1994c)]					
	● 4A7C6: The relative affinity for denatured/native gp120 is 7.9;					
	mutation 88 N/P impairs binding [Moore et al.(1994b)]					
	● 4A7C6: C1 region epitope, but substitutions 380 G/F and 420 I/R also impaired binding [Moore et al.(1994c)]					
gp120(81-100 LAI)	1D10	y	?	PQEVLVNVNTENFDMWKNDM	IIIB-rgp120	rat
	○ [Moore et al.(1994b), Nakamura et al.(1992), Dowbenko et al.(1988)]					
	● 1D10: Cross blocks 5B3 in IIIB-rsgp160 ELISA; type specific in rgp120 ELISA binding [Nakamura et al.(1992)]					
	● 1D10: The relative affinity for denatured/native gp120 is 13;					
	mutation 88 N/P impairs binding [Moore et al.(1994b)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp120(91-100 LAI)	133/192	y	L	ENFDMWKNDM	IIIB gp120	murine(IgG ₁)
	o [Niedrig et al.(1992), Moore et al.(1994b), Moore et al.(1993b)]					
	• 133/192: Epitope seems complex, binds multiple peptides [Niedrig et al.(1992)]					
	• 133/192: The relative affinity for denatured/native gp120 is 1.8 [Moore et al.(1994b)]					
	• 133/192: C1 region; substitutions 76P/Y, 113 D/A or R, 117 K/W, 420 I/R, 427 W/S impair binding, some substitutions enhanced [Moore et al.(1994c)]					
gp120(91-100 LAI)	C6	y	?	ENFDMWKNDM	mis-folded LAI rgp160	murine(IgG ₁)
	o [Moore et al.(1994b), Abacioglu et al.(1994)]					
	• C6: The relative affinity for denatured/native gp120 is 0.9; [Moore et al.(1994b)]					
	• C6: There is FNM/FDM polymorphism in LAI-based peptides; N is essential (J. P. Moore, per. comm.)					
	• C6: C1 region; epitope boundaries mapped by peptide scanning, FNMW core [Abacioglu et al.(1994)]					
gp120(91-100 LAI)	B2	y	?	ENFDMWKNDM	mis-folded LAI rgp160	murine(IgG _{2b})
	o [Moore et al.(1994b), Abacioglu et al.(1994), Moore et al.(1994c)]					
	• B2: The relative affinity for denatured/native gp120 is 1.4 [Moore et al.(1994b)]					
	• B2: There is FNM/FDM polymorphism in LAI-based peptides; N is essential (J. P. Moore, per. comm.)					
	• B2: C1 region; epitope boundaries mapped by peptide scanning, FNMW core [Abacioglu et al.(1994)]					
gp120(93-96 LAI)	B9	y	?	FNMW	mis-folded LAI rgp160	murine(IgG ₁)
	o [Abacioglu et al.(1994)]					
	• B9: C1 region; epitope boundaries mapped by peptide scanning [Abacioglu et al.(1994)]					
gp120(91-100 LAI)	B10	y	?	ENFDMWKNDM	mis-folded LAI rgp160	murine(IgG ₁)
	o [Moore et al.(1994b), Abacioglu et al.(1994)]					
	• B10: The relative affinity for denatured/native gp120 is .4 [Moore et al.(1994b)]					
	• B10: There is FNM/FDM polymorphism in LAI-based peptides; N is essential (J. P. Moore, per. comm.)					
	• B10: C1 region; Epitope boundaries mapped by peptide scanning, FNMW core [Abacioglu et al.(1994)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp120(89-103 IIIB)	L5.1	y	?	PNPQEVVVLVNVTFNF	vaccinia gp160	murine(IgG)
	o [Akerblom et al.(1990)]					
gp120(94-97 BH10)	B27	y	?	FNMW	mis-folded LAI rgp160	murine(IgG ₁)
	o [Abacioglu et al.(1994)]					
	• B27: C1 region; Epitope boundaries mapped by peptide scanning [Abacioglu et al.(1994)]					
gp120(94-99 BH10)	B35	y	?	FNMWKN	mis-folded LAI rgp160	murine(IgG ₁)
	o [Abacioglu et al.(1994)]					
	• B35: C1 region; Epitope boundaries mapped by peptide scanning [Abacioglu et al.(1994)]					
gp120(91-100 LAI)	489.1(961)	y	?	ENFDMWKNDM	envelope	murine(IgG)
	o [Moore et al.(1994b)]; Donor: C. Bruck, SKB, Belgium					
	• 489.1(961): The relative affinity for denatured/native gp120 is 1 [Moore et al.(1994b)]					
gp120(91-100 LAI)	T1.1	y	?	ENFDMWKNDM	vaccinia gp160	murine(IgG)
	o [Moore et al.(1994b), Akerblom et al.(1990), Broliden et al.(1990)]					
	• T1.1: C1 region; the relative affinity for denatured/native gp120 is 1 [Moore et al.(1994b)]					
	• T1.1: Also reacted in solid phase with gp120(234-248) NGTGPCTNVSTQCT					
	• T1.1: No ADCC activity; reactive peptide: NVTENFNMWKNDMVEQ, IIIB [Broliden et al.(1990)]					
gp120(91-100 LAI)	T7.1	y	?	ENFDMWKNDM	envelope	murine(IgG)
	o [Moore et al.(1994b), Bolmstedt et al.(1990), Moore et al.(1994c)]					
	• T7.1: The relative affinity of denatured/native gp120 is 4.0 [Moore et al.(1994b)]					
gp120(91-100 LAI)	T9	y	?	ENFDMWKNDM	envelope	murine(IgG)
	o [Moore et al.(1994b), Bolmstedt et al.(1990), Moore et al.(1994c)]					
	• T9: The relative affinity of denatured/native gp120 is 7.9 [Moore et al.(1994b)]					
	• T9: C1 region; external substitutions did not significantly impair binding, some enhanced [Moore et al.(1994c)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
gp120(91-100 LAI)	5B3	y	N	ENFDMWKNDM	IIIB-rsgp160	murine(IgG)
	o References			o [Moore et al.(1994b), Nakamura et al.(1992)]		
	• Comments			• 5B3: Cross blocks 1D10 in competitive IIIB-rsgp160 ELISA [Nakamura et al.(1992)]		
				• 5B3: No neutralization, blocks IIIB-gp120 sCD4 binding, localized to binding to residues 72-106; cross blocks 1D10 [Nakamura et al.(1992)];		
				• 5B3: The relative affinity of denatured/native gp120 is 8.3 [Moore et al.(1994b)]		
gp120(91-100 LAI)	MF49.1	y	?	ENFDMWKNDM	envelope	murine(IgG)
	o References			o [Moore et al.(1994b), Thiriart et al.(1989)]		
	• Comments			• MF49.1: The relative affinity of denatured/native gp120 is 3.8 [Moore et al.(1994b)]		
gp120(101-110 LAI)	B20	y	?	VEQMHEDIIS	mis-folded LAI rgp160	murine(IgG _{2a})
	o References			o [Moore et al.(1994b), Abacioglu et al.(1994)]		
	• Comments			• B20: The relative affinity for denatured/native gp120 is 1 [Moore et al.(1994b)]		
				• B20: C1 region; epitope boundaries mapped by peptide scanning; HEDII core [Abacioglu et al.(1994)]		
gp120(101-110 LAI)	B18	y	?	VEQMHEDIIS	mis-folded LAI rgp160	murine(IgG _{2a})
	o References			o [Moore et al.(1994b), Abacioglu et al.(1994)]		
	• Comments			• B18: The relative affinity for denatured/native gp120 is 1 [Moore et al.(1994b)]		
				• B18: C1 region epitope; Epitope boundaries mapped by peptide scanning, HEDII core [Abacioglu et al.(1994)]		
gp120(101-110 LAI)	MF39.1	y	?	VEQMHEDIIS	envelope	murine(IgG)
	o References			o [Moore et al.(1994b), Thiriart et al.(1989)]		
	• Comments			• MF39.1: The relative affinity of denatured/native gp120 is 30 [Moore et al.(1994b)]		
gp120(101-120 LAI)	T2.1	y	?	VEQMHEDIISLWDQSLKPCV	envelope	murine(IgG)
	o References			o [Moore et al.(1994b), Bolmstedt et al.(1990), Moore et al.(1994c)]		
	• Comments			• T2.1: The relative affinity for denatured/native gp120 is .27; mutations 113 D/R, 106 E/A, and 117 D/A impair binding [Moore et al.(1994b)]		
gp120(311-321 HXB10)	11/65	y	?	EQMHEDIISLWDQSLKPCVK	rgp120 BH10	rat(IgG _{2b})
	o References			o [McKeating et al.(1992a)]		
	• Comments			• 11/65: Binds only soluble gp120, not virion bound; used to control for gp120 shedding [McKeating et al.(1992a)]		

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp120(101-120 LAI)	6D8	y	?	VEQMHE DIISLWDQSLKPCV	IIIB-rgp120	rat
	o [Moore et al.(1994b), Nakamura et al.(1992), Dowbenko et al.(1988)]					
	• 6D8: Highly cross reactive with multiple stains by rgp120 ELISA [Nakamura et al.(1992)]					
	• 6D8: The relative affinity for denatured/native gp120 is 15; mutations 113 D/R and 113 D/A impair binding [Moore et al.(1994b)]					
gp120(101-120 LAI)	M96	y	n	VEQMHE DIISLWDQSLKPCV	HIV-1 451 env	rat(IgG _{2a})
	o [Moore et al.(1994b), di Marzo Veronese et al.(1992), Moore et al.(1994c)]					
	• M96: C1 region; the relative affinity for denatured/native gp120 is 6 [Moore et al.(1994b)]					
	• M96: Immunoblot reactive for strains IIIB, 451, MN, RF, and RUTZ [di Marzo Veronese et al.(1992)]					
gp120(101-120 LAI)	37.1.1(ADP 327)	y	?	VEQMHE DIISLWDQSLKPCV	env glycoprotein	murine(IgG)
	o [Moore et al.(1994b), Thiriart et al.(1989)]					
	• 37.1.1: The relative affinity for denatured/native gp120 is 8.6; mutations 113 D/R (but not A) and 117 K/W impair binding [Moore et al.(1994b)]					
gp120(101-120 LAI)	187.2.1(ADP 332)	y	?	VEQMHE DIISLWDQSLKPCV	env glycoprotein	murine(IgG)
	o [Moore et al.(1994b), Thiriart et al.(1989), Moore et al.(1994c)]					
	• 187.2.1: The relative affinity for denatured/native gp120 is 7; mutations 113 D/A (but not R) and 117 K/W impair binding [Moore et al.(1994b)]					
gp120(101-120 LAI)	MF58.1	y	?	VEQMHE DIISLWDQSLKPCV	envelope	murine(IgG)
	o [Moore et al.(1994b), Thiriart et al.(1989)]					
	• MF58.1: The relative affinity for denatured/native gp120 is 10; mutations 102 E/L and 106 E/A impair binding [Moore et al.(1994b)]					
gp120(101-120 LAI)	MF77.1	y	?	VEQMHE DIISLWDQSLKPCV	envelope	murine(IgG)
	o [Moore et al.(1994b), Thiriart et al.(1989)]					
	• MF77.1: The relative affinity for denatured/native gp120 is 11 [Moore et al.(1994b)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp120(101-120 LAI)	MF119.1	y	?	VEQMHEDIISLWDQSLKPCV	envelope	murine(IgG)
	o [Moore et al.(1994b), Thiriart et al.(1989)]					
	• MF119.1: The relative affinity for denatured/native gp120 is 30; mutations 113 D/A, 113 D/R 117 K/W impair binding [Moore et al.(1994b)]					
gp120(101-120 LAI)	MF4.1	y	?	VEQMHEDIISLWDQSLKPCV	envelope	murine(IgG)
	o [Moore et al.(1994b), Thiriart et al.(1989)]					
	• MF4.1: The relative affinity for denatured/native gp120 is 8 [Moore et al.(1994b)]					
gp120(101-120 LAI)	MF53.1	y	?	VEQMHEDIISLWDQSLKPCV	envelope	murine(IgG)
	o [Moore et al.(1994b), Thiriart et al.(1989)]					
	• MF53.1: The relative affinity for denatured/native gp120 is 10 [Moore et al.(1994b)]					
gp120(111-120 LAI)	135/9	y	?	LWDQSLKPCV	env glycoprotein	murine(IgG)
	o [Moore et al.(1994b), Niedrig et al.(1992), Moore et al.(1994c)]					
	• 135/9: The relative affinity for denatured/native gp120 is 15; mutation 113 D/R impairs binding to native and denatured, 113 D/A only to denatured. [Moore et al.(1994b)]					
	• 135/9: Substitutions 106 E/A, 113 D/A or R, and 117 K/W impair binding, some substitutions enhance [Moore et al.(1994c)]					
gp120(101-120 LAI)	MF46.1	y	?	LWDQSLKPCV	envelope	murine(IgG)
	o [Moore et al.(1994b), Thiriart et al.(1989)]					
	• MF46.1: The relative affinity for denatured/native gp120 is 8.5 [Moore et al.(1994b)]					
gp120(101-120 LAI)	C4	y	?	LWDQSLKPCV	mis-folded LAI rgp160	murine(IgG1)
	o [Moore et al.(1994b), Abacioglu et al.(1994)]					
	• C4: The relative affinity for denatured/native gp120 is 10 [Moore et al.(1994b)]					
	• C4: C1 region; Epitope boundaries mapped by peptide scanning, BH10 core IISLW [Abacioglu et al.(1994)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp120(101-120 LAI)	10A11	y	?	LWDQSLKPCV	envelope	murine(IgG)
	o [Moore et al.(1994b), Thiriart et al.(1989)]					
	• 10A11: The relative affinity for denatured/native gp120 is 7.8; mutation 113 D/R impairs binding [Moore et al.(1994b)]					
gp120(101-120 LAI)	12G10	y	?	LWDQSLKPCV	envelope	murine(IgG)
	o [Moore et al.(1994b), Thiriart et al.(1989)]					
	• 12G10: The relative affinity for denatured/native gp120 is 17; mutation 117 K/W impairs binding [Moore et al.(1994b)]					
gp120(101-120 LAI)	7C10	y	?	LWDQSLKPCV	envelope	murine(IgG)
	o [Moore et al.(1994b), Thiriart et al.(1989)]					
	• 7C10: The relative affinity for denatured/native gp120 is 5.8; mutation 117 K/W impairs binding [Moore et al.(1994b)]					
gp120(102-121 LAI)	W1	y	?	EQMHEDIISLWDQSLKPCVK	envelope	murine(IgG)
	o [Moore et al.(1994b)]; Donor: D. Weiner, U. Penn.					
	• W1: The relative affinity for denatured/native gp120 is 6; mutations 113 D/A, 113 D/R, and 117 K/W impair binding [Moore et al.(1994b)]					
gp120(114-123)	135/9	y	L	MHEDIISLWD	IIB gp120	murine(IgG ₁)
	o [Niedrig et al.(1992)]					
gp120(122-141 LAI)	6D5	y	?	LTPLCVSLKCTDLKNDTNTN	envelope	murine(IgG)
	o [Moore et al.(1994b), Moore et al.(1994c)]; Donor: S. Nigida, NCI, USA					
	• 6D5: The relative affinity for denatured/native gp120 is 15; mutations Δ119-205 and 125 L/G impair binding [Moore et al.(1994b)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp120(162-169 HXB2)	C108G	y	L	STSIRGKV	HIV IIIB infection	chimpanzee(IgG _{1κ})
	o [Warrier et al.(1994), Wu et al.(1995)]					
	• C108G: High affinity, potent neutralization of HIV IIIB; binding not effected by reduction of disulfide bonds; binding disrupted by removal of N-linked glycans; peptide binding lower affinity than glycosylated env [Warrier et al.(1994)]					
	• C108G: Strain specificity: LAI, Bal, HXB2; conformational character; glycosylation site at 160 critical; mutation of conserved glycosylation site at 156 increased expression of the C108G epitope [Wu et al.(1995)]					
gp120(162-171 V2 BH10)	10/76b	y	L	STSIRGKVQ	BH10 rgp120	rat
	o [McKeating et al.(1993b), McKeating et al.(1993a), Shotton et al.(1995), Wu et al.(1995)]					
	• 10/76b: R to L substitution abrogated binding; human sera recognize epitope [McKeating et al.(1993b)]					
	• 10/76b: Studied in the context of a neutralization escape mutant [McKeating et al.(1993a)]					
	• 10/76b: Included in cross-competition and neutralization studies [Shotton et al.(1995)]					
	• 10/76b: HX10 strain specificity; binds native, deglycosylated, or dentured gp120 [Wu et al.(1995)]					
gp120(162-171)	11/4c	y	L	STSIRGKVQ	BH10 rgp120	rat
	o [McKeating et al.(1993b), Wu et al.(1995)]					
	• 11/4c: R to L substitution abrogated binding; human sera recognize epitope [McKeating et al.(1993b)]					
	• 11/4c: HX10 strain specificity; binds native, deglycosylated, or dentured gp120 [Wu et al.(1995)]					
gp120(162-171)	11/41e	y	L	STSIRGKVQ	rgp120 LAI:BH10	rat
	o [McKeating et al.(1993b), Shotton et al.(1995), Wu et al.(1995)]					
	• 11/41e: R to L abrogated binding; human sera recognize the epitope [McKeating et al.(1993b)]					
	• 11/41e: Included in cross-competition and neutralization studies [Shotton et al.(1995)]					
	• 11/41e: HX10 strain specificity; binds native and deglycosylated gp120 [Wu et al.(1995)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
gp120(162-171)	11/4b	y	L	STSIRGKVQ	rgp120 LAI:BH10	rat
	o References					
	• Comments					
gp120(162-171) BH10	RSD-33	y	STSIRGKVQ	BH10 gp120	?	
	o [McKeating et al.(1993b), Shotton et al.(1995), Wu et al.(1995)]					
	• 11/4b: A change from R to L abrogated binding; human sera recognize epitope [McKeating et al.(1993b)]					
	• 11/4b: Included in cross competition and neutralization studies [Shotton et al.(1995)]					
	• 11/4b: HXB10 strain specificity; binds native, deglycosylated, or denatured gp120 [Wu et al.(1995)]					
gp120(162-170) BH10	6C4/S	y	STSIRGKV	BH10 gp120	?	
	o [Moore et al.(1993a)]; Donor: R. Daniels (NIMR, UK)					
gp120(170-180) BH10	G3-4	y	L	QKEYAFFYKLD	?	murine
	o [Ho et al.(1991), Sullivan et al.(1993), Sattentau et al.(1993), Moore et al.(1993a), Moore et al.(1994a)]					
	o [Yoshiyama et al.(1994), Wu et al.(1995)]					
	• G3-4: Binding is sensitive to removal of glycans by endo H [Ho et al.(1991)]					
	• G3-4: Substitutions in residues 176 to 184 affect MAb recognition; substitutions in V2 can result in gp120-gp41 dissociation [Sullivan et al.(1993)]					
	• G3-4: Increased binding in the presence of sCD4 [Sattentau et al.(1993)]					
	• G3-4: V2 region, marginal binding to peptide, binding inhibited by 183/184 PI/SG substitution [Moore et al.(1993a)]					
	• G3-4: Conformationally sensitive; sporadic cross-reactivity among and outside B clade gp120s [Moore et al.(1994a)]					
	• G3-4: Broadly reactive, with BH10, RF, and MN; binds native, but not denatured or deglycosylated gp120, binds to deglycosylated V1V2 fusion protein; suggests importance of glycans outside the V1V2 region for binding [Wu et al.(1995)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp120(170-180 IIIB)	BAT085	y	L	QKEYAFFYKLD	purified IIIB gp120	murine(IgG)
	o [Fung et al.(1992), Pirofski et al.(1993), Moore et al.(1993a), D'Souza et al.(1994), Wu et al.(1995), Moore et al.(1994c)]					
	• BAT085: V2 region; sCD4 does not block; neutralizes IIIB and some primary isolates, but not MN or RF; binds MN; Deglycosylation or DDT reduction of gp120 does not diminish reactivity [Fung et al.(1992)]					
	• BAT085: 7/8 V2 murine MAbs required gp120 native structure to bind, but BAT085 was the exception; type-specific [Moore et al.(1993a)]					
	• BAT085: Multi-lab study for antibody characterization and assay comparison; did not bind MN or SF2 [D'Souza et al.(1994)]					
	• BAT085: HXB10 strain specificity; binds native, deglycosylated, or dentured gp120 [Wu et al.(1995)]					
	• BAT085: Peptide affinities of G3-136 and G3-4 100 fold less than BAT085, but BAT085 has lower affinity for BH10 gp120 and is a weaker neutralization antibody than the other two [Moore et al.(1993a)]					
gp120(170-180 IIIB)	G3-136	y	L	QKEYAFFYKLD	purified IIIB gp120	murine(IgG)
	o [Fung et al.(1992), Pirofski et al.(1993), Moore et al.(1993a)]					
	• G3-136: V2 region; binds and neutralizes IIIB and RF in CEM-SS cells, but not MN; neutralization activity against a few primary isolates in PBMC; sCD4 binding inhibits binding (contrast with BAT085); deglycosylation or reduction of gp120 by DTT diminishes reactivity; [Fung et al.(1992)]					
	• G3-136: Marginal binding to peptide, binding inhibited by 183/184 PI/SG substitution [Moore et al.(1993a)]					
gp120(172-191 HXB2)	38/12b	y	?	EYAFFYKLDIIPIDNDTSY	BH10 gp120	rat
	o [Wu et al.(1995)]					
	• 38/12b: Broad specificity: HXB2, MN, SF162; binds native and deglycosylated gp120 [Wu et al.(1995)]					
gp120(172-191 HXB2)	38/60b	y	?	EYAFFYKLDIIPIDNDTSY	BH10 gp120	rat
	o [Wu et al.(1995)]					
	• 38/60b Strain specificity: HXB2; binds native and deglycosylated gp120 [Wu et al.(1995)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	○ References					
	● Comments					
gp120(162-181)	12b	y	L	STSIRGKVQKEYAFFYKLDI	LAI BH10 rgp120	rat
	○ [Shotton et al.(1995)]					
	● 12b: V2 MAb neutralized HXB2, but not IIIB, MN or RF; position 179-180 LD to DL abrogates binding; competes with 12b, but not 74 [Shotton et al.(1995)]					
gp120(172-181 HXB2)	60b	y	N	EYAFFYKLDI	LAI BH10 rgp120	rat
	○ [Shotton et al.(1995)]					
	● 60b: V2 MAb did not neutralize HXB2; bound to rgp120 ELISA; position 179-180 LD to DL abrogates binding, as do changes outside the minimum epitope; competes with 12b, but not 74 [Shotton et al.(1995)]					
gp120(172-181)	74	y	N	EYAFFYKLDI	LAI BH10 rgp120	rat
	○ [Shotton et al.(1995)]					
	● 74: V2 MAb did not neutralize HXB2; did not bind rgp120 ELISA; position 179-180 LD to DL abrogates binding, as do changes outside the minimum epitope; does not compete with 60b or 12b, and is enhanced by two conformation dependent MAbs [Shotton et al.(1995)]					
gp120(221-220 LAI)	3D3.B8	y	?	EPIPIHYCAPA	env glycoprotein	murine(IgG)
	○ [Moore et al.(1994b), Bolmstedt et al.(1990)]					
	● 3D3.B8: The relative affinity denatured/native gp120 is >> 10 [Moore et al.(1994b)]					
gp120(211-220 LAI)	4C11.D8	y	?	EPIPIHYCAPA	envelope glycoprotein	murine(IgM)
	○ [Bolmstedt et al.(1990), Moore et al.(1994b)]					
	● 4C11.D8: The relative affinity denatured/native gp120 is >> 10 [Moore et al.(1994b)]					
gp120(201-220 LAI)	322-151	y	?	EPIPIHYCAPA	envelope glycoprotein	murine(IgG)
	○ [Moore et al.(1994b), Moore et al.(1994c)]; Donor: G. Robey, Abbot Labs					
	● 322-151: The relative affinity denatured/native gp120 is 30 [Moore et al.(1994b)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp120(211-230 LAI)	493-156	y	?	EPIPIHYCAPAGFAILKCN	envelope glycoprotein	murine(IgG)
	o [Moore et al.(1994b)]; Donor: G. Robey, Abbot Labs					
	• 493-156 The relative affinity denatured/native gp120 is >10 [Moore et al.(1994b)]					
gp120(222-231 LAI)	J1	y	?	GFAILKCNNK	peptide	murine(IgG)
	o [Moore et al.(1994b), Moore et al.(1994c)]; Donor: J. Moxie, U. Penn.					
	• J1: The relative affinity denatured/native gp120 is 30 [Moore et al.(1994b)]					
gp120(222-231 LAI)	J3	y	?	GFAILKCNNK	peptide	murine(IgG)
	o [Moore et al.(1994b)]; Donor: J. Moxie, U. Penn.					
	• J3: The relative affinity denatured/native gp120 is 30 [Moore et al.(1994b)]					
gp120(242-261 LAI)	MF87.1	y	?	RPVVSTQLL	envelope	murine(IgG)
	o [Moore et al.(1994b), Thiriart et al.(1989)]					
	• MF87.1; The relative affinity denatured/native gp120 is 10; mutations 252 R/W, 257 T/G, and 257 T/R impair binding [Moore et al.(1994b)]					
gp120(242-261 LAI)	MF169.1	y	?	RPVVSTQLL	envelope	murine(IgG)
	o [Moore et al.(1994b), Thiriart et al.(1989), Moore et al.(1994c)]					
	• MF169.1: The relative affinity denatured/native gp120 is 11; mutations 252 R/W, 257 T/G, and 257 T/R impair binding [Moore et al.(1994b)]					
gp120(242-261 LAI)	MF170.1	y	?	RPVVSTQLL	envelope	murine(IgG)
	o [Moore et al.(1994b), Thiriart et al.(1989), Moore et al.(1994c)]					
	• MF170.1: The relative affinity denatured/native gp120 is 15; mutations 252 R/W, 257 T/G, and 257 T/R impair binding to denatured and native gp120; 262N/T 269 E/L and 281 A/V impair binding to native gp120 [Moore et al.(1994b)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
gp120(242-261 LAI)	213.1(ADP 334)	y	?	RPVVSTQLLL	env glycoprotein	murine(IgG)
	o References				o [Moore et al.(1994b), Thiriart et al.(1989)]	
	• Comments				• 213.1: The relative affinity denatured/native gp120 is 100; mutations 252 R/W, 257 T/G or T/R impair binding [Moore et al.(1994b)]	
gp120(252-271 LAI)	M89	y	n	RPVVSTQLLLNGSLAEEEVV	HIV-1 451 env	murine(IgG ₁)
	o References				o [Moore et al.(1994b), di Marzo Veronese et al.(1992), Moore et al.(1994c)]	
	• Comments				• M89: C2 region; the relative affinity for denatured/native gp120 is >30; mutations 257 T/R and 269 E/L impair binding [Moore et al.(1994b)]	
	• M89: Immunoblot reactive, RIP negative, for strains IIIB, 451, MN, RF, and RUTZ [di Marzo Veronese et al.(1992)]					
gp120(252-271 LAI)	B12	y	?	RPVVSTQLLLNGSLAEEEVV	mis-folded LAI rgp160	murine(IgG)
	o References				o [Moore et al.(1994b)]	
	• Comments				• B12: C2 region; the relative affinity for denatured/native gp120 is 27; mutations 257 T/R and 262 N/T impair binding [Moore et al.(1994b)]	
gp120(252-271 LAI)	B13	y	?	RPVVSTQLLLNGSLAEEEVV	mis-folded LAI rgp160	murine(IgG _{2a})
	o References				o [Moore et al.(1994b), Abacioglu et al.(1994), Moore et al.(1994c)]	
	• Comments				• B13: the relative affinity for denatured/native gp120 is 30; mutations 257 T/R and 269 E/L, impair binding [Moore et al.(1994b)]	
	• B13: C2 region; epitope boundaries mapped by peptide scanning, core epitope: TQLLN [Abacioglu et al.(1994)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(Isotype)
	o References					
	• Comments					
gp120(257-262 BH10)	B24	y	?	TQLLN	mis-folded LAI rgp160	murine(IgG _{2a})
	o [Abacioglu et al.(1994)]					
gp120(257-262 BH10)	B3	y	?	TQLLN	mis-folded LAI rgp160	murine(IgG ₁)
	o [Abacioglu et al.(1994)]					
gp120(257-262 BH10)	B21	y	?	TQLLN	mis-folded LAI rgp160	murine(IgG ₁)
	o [Abacioglu et al.(1994)]					
gp120(257-262 BH10)	B23	y	?	TQLLN	mis-folded LAI rgp160	murine(IgG _{2a})
	o [Abacioglu et al.(1994)]					
gp120(257-262 BH10)	B25	y	?	TQLLN	mis-folded LAI rgp160	murine(IgG ₁)
	o [Abacioglu et al.(1994)]					
gp120(257-263 BH10)	B29	y	?	TQLLN	mis-folded LAI rgp160	murine(IgG _{2a})
	o [Abacioglu et al.(1994)]					
gp120(257-263 BH10)	B26	y	?	TQLLN	mis-folded LAI rgp160	murine(IgG ₁)
	o [Abacioglu et al.(1994)]					
gp120(257-263 BH10)	B36	y	?	TQLLN	mis-folded LAI rgp160	murine(IgG ₁)
	o [Abacioglu et al.(1994)]					
	• B24, B3, B21, B23, B25, B29, B26, B36: C2 region, epitope boundaries mapped by peptide scanning [Abacioglu et al.(1994)]					
gp120(252-271 LAI)	C13	y	?	RPVVSTQLLNGLAEEEVV	mis-folded LAI rgp160	murine(IgG ₁)
	o [Moore et al.(1994b), Abacioglu et al.(1994)]					
	• C13: The relative affinity for denatured/native gp120 is 36; mutations 257 T/R, 267 E/L, and 269 E/L impair binding [Moore et al.(1994b)]					
	• C13: epitope boundary extended to RPVVSTQLLNGLAEEEVVIR, to take into account the effect of a point mutation [Abacioglu et al.(1994)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
gp120(262-281 LAI)	110.E	y	?	NGSLAEEEVIRSVNFTDNA	envelope glycoprotein	murine(IgG)
	o [Moore et al.(1994b), Moore et al.(1994c)]; Donor: F. Traincard					
	• 110.E: The relative affinity for denatured/native gp120 is 7.3 [Moore et al.(1994b)]					
gp120(261-280 LAI)	110.C	y	?	VIRSVNFTDN	envelope glycoprotein	murine(IgG)
	o [Moore et al.(1994b), Moore et al.(1994c)]; Donor: F. Traincard					
	• 110.C: The relative affinity for denatured/native gp120 is 1 [Moore et al.(1994b)]					
gp120(299-304 IIIB)	IIIB-V3-21	y	N	INCTRP	Peptide	murine(IgG ₁)
	o [Laman et al.(1992)]					
	• IIIB-V3-21: Similar to MAb murine(IgG ₁) IIIB-V3-26;					
gp120(299-304 IIIB)	IIIB-V3-26	y	N	SVEINCTRPNNNTRKSI	Peptide	murine(IgG ₁)
	o [Laman et al.(1992)]					
	• IIIB-V3-21 and IIIB-V3-26: Binds to the base of the V3 loop on denatured gp120 [Laman et al.(1992)]					
gp120(299-308 IIIB)	MO97/V3	y	N	PNNNTRKSIR	rec pB1 (IIIB env 286-467)	human(IgM)
	o [Ohlin et al.(1992)]					
gp120(300-315 HXB10)	8/38c	y	L	NNNTRKRIRIQRGPGR	rec BH10 gp120	rat(IgG _{2a})
	o [McKeating et al.(1992a)]					
gp120(300-315 HXB10)	8/64b	y	L	NNNTRKRIRIQRGPGR	rec BH10 gp120	rat(IgM)
	o [McKeating et al.(1992a)]					
	• 8/38c and 8/64b: Bind to virion gp120 and neutralize only in the presence of sCD4 [McKeating et al.(1992a)]					
gp120(304-308 IIIB)	MO99/V3	y	N	RKSIR	rec pB1 (IIIB env 286-467)	human(IgM)
	o [Ohlin et al.(1992)]					
gp120(309-318 & 329-338)	M096/V3	y	?	IQRGPGRAFV & AHCNISRAKW	rec pB1 (IIIB env 286-467)	human(IgM)
	o [Ohlin et al.(1992)]					
gp120(314-323 & 494-503)	MO101/V3,C4	y	?	GRAFVTIGKI & LGVAPTKAKR	rec pB1 (IIIB env 286-467)	human(IgM)
	o [Ohlin et al.(1992)]					
	• MO97, MO99, M096, MO101: generated through <i>in vitro</i> "immunization" of uninfected-donor lymphocytes M101 reacts with peptides from the V3 and C4 regions [Ohlin et al.(1992)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp120(316-322)	N701.9b	y	L P	PGRAFY	HIV-1 infection	human(IgG ₁)
	o [Scott Jr et al.(1990)]					
	• N701.9b: Type specific neutralization, ADCC directed against MN infected cells [Scott Jr et al.(1990)]					
gp120(302-321 BH10)	MAG 49	y	L	NTRKSIRIQRGPGRFVTIG	sCD4-(rHXB2 gp120)-complex	murine
	o [Kang et al.(1994)]					
gp120(302-321 BH10)	MAG 53	y	L	NTRKSIRIQRGPGRFVTIG	sCD4-(rHXB2 gp120)-complex	murine
	o [Kang et al.(1994)]					
gp120(302-321 BH10)	MAG 56	y	L	NTRKSIRIQRGPGRFVTIG	sCD4-(rHXB2 gp120)-complex	murine
	o [Kang et al.(1994)]					
gp120(302-321 BH10)	MAG 109	y	L	NTRKSIRIQRGPGRFVTIG	sCD4-(rHXB2 gp120)-complex	murine
	o [Kang et al.(1994)]					
	• MAG 49, 53, 56, and 109 bind a V3 loop peptide, were sensitive to both V3 loop mutations and a mutation at the base of the V1/V2 loop structure (120/121 VK/LE) [Kang et al.(1994)]					
gp120(306-338 BH10)	?	n	L	PNNNTRKSIRIQRGPGR- AFVTIGKIGNMRQAHC	Peptide	rabbit(IgG)
	o [Neurath & Strick(1990)]					
	• 21 V3 loop variant peptides spanning this region were used; serological cross-reactivity correlated with divergence [Neurath & Strick(1990)]					
gp120(307-318 IIIB)	9284	y	L	NNTRKSIRIQRG	disrupted IIIB virion	murine(IgG ₁)
	o [Skinner et al.(1988), Wyatt et al.(1992), McKeating et al.(1992a), VanCott et al.(1994), Moore et al.(1994c)];					
	o [Sattentau et al.(1993)]; Dupont, commercial					
	• 9284: IIIB type-specific binding and neutralization [Skinner et al.(1988)]					
	• 9284: Does not bind MN gp120, just IIIB [VanCott et al.(1994)]					
	• 9284: Inhibits C4 region antibody that has conformational requirements (G3-299, G3-519) [Moore et al.(1993b)]					
	• 9284: Single amino acids substitutions in the C4 region (427 W/V or W/S), or the base of the V3 loop (298 R/G), enhance 9284 binding and neutralization [Wyatt et al.(1992)]					
	• 9284: Increased binding in the presence of sCD4 [Sattentau et al.(1993)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	○ References					
	● Comments					
gp120(308-313 V3)	1026	y	L	NKRKRIHIGPGRAYTTKNIIGTIC	rgp120 MN	murine(IgG)
	○ [Nakamura et al.(1993), Bou-Habib et al.(1994)]					
	● 1026: Bound diverse strains, neutralizing activity against MN [Nakamura et al.(1993)]					
	● 1026: Greater affinity for T cell tropic strain T-CSF, derived from JR-CSF, than the primary isolate JR-CSF [Bou-Habib et al.(1994)]					
gp120(308-313)	1034	y	L	V3 tip	rgp120 MN	murine(IgG)
	○ [Bou-Habib et al.(1994)]					
	● 1034: Greater affinity for T cell tropic T-CSF, derived from JR-CSF, than primary isolate JR-CSF [Bou-Habib et al.(1994)]					
gp120(304-318 LAI)	?	y	?	RKSIRIQRGPGRAY	?	human(IgG and IgM)
	○ [Chin et al.(1995)]					
	● Mimicking the humoral immune response in vitro					
	supports isotype switching; human IgG MAbs were generated from naive donors [Chin et al.(1995)]					
gp120(299-304 IIIB)	IIIB-V3-34	y	N	IRIQRGPGR	Peptide	murine(IgG ₁)
	○ [Laman et al.(1992)]					
	● IIIB-V3-34: Shortest peptide that bound was: QRGP;					
	—Q-GPG— did not tolerate amino acid substitutions in PEPSCAN [Laman et al.(1992)]					
gp120(299-304 IIIB)	IIIB-V3-13	y	N	KRIRIQRGPGRAYVTIG	Peptide	murine(IgG ₁)
	○ [Laman et al.(1992)]					
gp120(308-328 BRU)	110.3	y	L	QRGPGRAY	BRU infected cell lysates	murine(IgG ₁)
	○ [Kinney Thomas et al.(1988), Evans et al.(1989), Pirofski et al.(1993), Langedijk et al.(1992)]					
	● 110.3: Variable region sequenced; heavy chain: V 7138(40), D deletion, J _H 4;					
	light chain: V _κ 21(47), J _κ 2 [Pirofski et al.(1993)]					
	● 110.3: Included as a control [Evans et al.(1989)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	○ References					
	● Comments					
gp120(308-328 BRU)	110.4	y	L	QRGPGR ^A F	BRU infected cell lysates	murine(IgG _{1κ})
	○ [Kinney Thomas et al.(1988), Pirofski et al.(1993), Langedijk et al.(1992)]					
	● 110.4: Variable region sequenced; heavy chain: V 3660-SB32, D closest to DSP2.3, 2.4 and .6, J _H 2; light chain: V _κ 21, J _κ 2 [Pirofski et al.(1993)]					
gp120(308-328 BRU)	110.5	y	L	QRGPGR ^A F	BRU infected cell lysates	murine(IgG _{1κ})
	○ [Kinney Thomas et al.(1988), Pirofski et al.(1993), Langedijk et al.(1992), McKeating et al.(1992a)]					
	○ [Moore et al.(1993b), Sattentau et al.(1995)]					
	● 110.5: Variable region sequenced; heavy chain: V 3660-SB32, D closest to DSP2.3, 2.4 and .6, J _H 2; light chain: V _κ 21, J _κ 2 [Pirofski et al.(1993)]					
	● 110.5: Thrombin cleavage of V3 loop between R-315 and A-316 abrogates binding; can inhibit C4 region antibody that has conformational requirements (G3-299); Binding to native gp120 100-300 fold greater than to denatured [Moore et al.(1993b)]					
	● 110.5: Pretreatment of HX10-infected H9 cells with sCD4 decreases signal from 110.5 at 37 degrees due to dissociation of gp120-gp41 [Sattentau et al.(1995)]					
gp120(V3 BRU)	110.6	y	L(weak)	RGPGR ^A FV	BRU infected cell lysates	murine(IgG _{1λ})
	○ [Kinney Thomas et al.(1988), Pirofski et al.(1993), Langedijk et al.(1992)]					
	● 110.6: Variable region sequenced; heavy chain: V J558-146b.1α, D closest to DSP16.2, J _H 3; light chain: V _λ 1, J _λ 1 [Pirofski et al.(1993)]					
gp120(V3)	BAT123	y	L	V3 tip	IIIB gp120	murine(IgG _{1κ})
	○ [Pirofski et al.(1993), Liou et al.(1989), Safrit et al.(1993), Fung et al.(1990)]					
	● BAT123: Variable region sequenced; heavy chain: V 3660-SB32, D unknown, J _H 3; light chain: V _κ 21, J _κ 2. [Pirofski et al.(1993)]					
	● BAT123: Anti-idiotypic MAb, AB19-4i, stimulates anti-anti-ID which neutralizes MN and IIIB [Fung et al.(1990)]					
	● BAT123: Passive transfer to Hu-PBS-SCID mice confers protection against challenge with homologous cell-free virus [Safrit et al.(1993)]					
gp120(V3)	CGP 47 439	y	L	V3 tip	IIIB gp120	BAT123-human Ig chimera
	○ [Safrit et al.(1993), Liou et al.(1989)]					
	● GP 47 439: passive transfer to Hu-PBS-SCID mice confers protection against challenge with homologous cell-free virus; BAT123-human Ig chimera [Safrit et al.(1993)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	○ References					
	● Comments					
gp120(V3 MN)	10F10	y	L	RKRIHIGPGRAFYTT	Peptide	murine(IgG ₁)
	○ [Duarte et al.(1994)]					
	● 2C4: Putative epitope lies within IHIGPGRAFYT; generated by multi-epitope polypeptide immunization; recognize MN and SC (TRSIHIGPGRAFYTT) peptides, lower affinity for SF2 [Duarte et al.(1994)]					
gp120(V3 MN)	2C4	y	L(MN)	RKRIHIGPGRAFYTT	Peptide	murine(IgG _{2a})
	○ [Duarte et al.(1994)]					
	● 2C4: Putative epitope lies within IHIGPGRAFYT; neutralizes MN, not IIIB and SF2 generated by multiepitope polypeptide immunization; recognize MN and SC (TRSIHIGPGRAFYTT) peptides, lower affinity for SF2 [Duarte et al.(1994)]					
gp120(V3)	19b	y	L P	-I—G-FY-T	HIV-1 infection	human(IgG)
	○ [Moore et al.(1995b), Scott Jr et al.(1990), Moore et al.(1994a), Moore et al.(1995a)]					
	● 19b: binds to some gp120s from clades A,B,C,E, and F; weakly neutralized some B and one C clade virus [Moore et al.(1995b)]					
	● 19b: V3 loop binding MAb that is more broadly clade cross-reactive than most [Moore et al.(1994a)]					
	● 19b: Despite broad gp120 binding reactivity, not broadly neutralizing [Moore et al.(1995a)]					
gp120(311-321 HXB10)	10/54	y	?	RGPGRAFVTIG	rgp120 BH10	rat(IgG ₁)
	○ [McKeating et al.(1993a), McKeating et al.(1992a)]					
	● 10/54 was studied in the context of a neutralization escape mutant [McKeating et al.(1993a)]					
gp120(311-321 HXB10)	10/36e	y	?	RGPGRAFVTIG	rgp120 BH10	rat(IgG _{2a})
	○ [McKeating et al.(1992a)]					
gp120(311-321 HXB10)	11/85b	y	?	RGPGRAFVTIG	rgp120 BH10	rat(IgG _{2b})
	○ [McKeating et al.(1992a)]					
	● 10/54, 10/36e, and 11/85b: Binding to virion gp120 enhanced by sCD4 [McKeating et al.(1992a)]					
gp120(V3)	loop 2	y		SISGPGRAFYTG	HIV-1 infection	human Fab
	○ [Moore et al.(1994a), Barbas III et al.(1993)]					
	● loop 2: Shows modest cross-reactivity among B clade gp120s, little outside B clade [Moore et al.(1994a)]					
	● loop 2: Sequences of the heavy and light chain Fab variable regions were generated [Barbas III et al.(1993)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
○ References						
● Comments						
gp120(V3 MN)	257-D	y	L	KRIHI	HIV-1 infection	human(IgG _{1λ})
<ul style="list-style-type: none"> ○ [Gorny et al.(1991), Gorny et al.(1993), Cavacini et al.(1993)] ○ [VanCott et al.(1994), Zolla-Pazner et al.(1995), D'Souza et al.(1994)] ● 257-D: Also called 257-2-D-IV ● 257-D: Included a multi-lab study for antibody characterization and assay comparison; best NAb against MN, not IIIB [D'Souza et al.(1994)] ● 257-D: Neutralizes MN; binds SF2: KSIYI; specificity: MN, SF2, NY5, RF. [Gorny et al.(1993)] ● 257-D: Additive MN or SF2 neutralization when combined with CD4 binding site MAb F105; does not neutralize RF [Cavacini et al.(1993)] ● 257-D: Potent MN neutralization, slow dissociation constant [VanCott et al.(1994)] ● 257-D: In serotyping study using flow-cytometry, bound only to virus with KRIHI [Zolla-Pazner et al.(1995)] 						
gp120(V3)	4117C	y	L	IXIGPGR	HIV-1 infection	human(IgG _{1λ})
<ul style="list-style-type: none"> ○ [Tilley et al.(1992), di Marzo Veronese et al.(1993), Pinter et al.(1993b), Pinter et al.(1993a)] ● 4117C: Binds V3 loop; does not immunoprecipitate soluble gp120, does react with gp120 on intact virions [Pinter et al.(1993b)] ● 4117C: Neutralizes SF2 and MN synergistically combined with anti-CD4 binding site discontinuous MAb [Pinter et al.(1993a), Tilley et al.(1992)] 						
gp120(V3 MN)	41148D	y	L	KRIHIGP	HIV-1 infection	human(IgG)
<ul style="list-style-type: none"> ○ [Pinter et al.(1993b)] ● 41148D: neutralizes less potently than 4117C, reacts with MN, IIIB, SF2 [Pinter et al.(1993b)] 						
gp120(V3 MN)	453-D	y	L	IHIGPGR	HIV-1 infection	human(IgG _{1λ})
<ul style="list-style-type: none"> ○ [Gorny et al.(1993), VanCott et al.(1994)] ● 453-D: Neutralizes MN; binds SF2: IYIGPGR; specificity: MN, SF2, NY5, RF [Gorny et al.(1993)] ● 453-D: Moderate homologous neutralization, moderately slow dissociation rate [VanCott et al.(1994)] 						

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	○ References					
	● Comments					
gp120(V3)	504-D	y	L	IHIGPGR	HIV-1 infection	human(IgG _{1κ})
	○ [Gorny et al.(1993)]					
	● 504-D; Neutralizes MN; binds SF2: IYIGPGR [Gorny et al.(1993)]					
gp120(V3)	418-D	y	L	HIGPGRA	HIV-1 infection	human(IgG _{1κ})
	○ [Gorny et al.(1993)]					
	● 418-D: Neutralizes MN, does not bind to SF2 or HXB2 [Gorny et al.(1993)]					
gp120(V3)	311-11D	y	L	KRIHIGP	HIV-1 infection	human(IgG _{1λ})
	○ [Gorny et al.(1993)]					
	● 311-11D: Neutralizes MN; binds SF2: KSIYIGP [Gorny et al.(1993)]					
gp120(V3)	391/95-D	y	L	RKRIHIGPGRAFYTT	HIV-1 infection	human(IgG _{1κ})
	○ [Gorny et al.(1993)]					
	● 391/95-D: Neutralizes MN; binds to SF2, not IIIB [Gorny et al.(1993)]					
gp120(V3 MN)	412-D	y	L	RKRIHIGPGRAFYTT	HIV-1 infection	human(IgG _{1κ})
	○ [Gorny et al.(1993), VanCott et al.(1994)]					
	● 412-D: Neutralizes MN, does not bind SF2 or HXB2; not reactive with hexa or heptapeptides by PEPscan [Gorny et al.(1993)]					
	● 412-D: Relatively rapid dissociation and weak homologous neutralization; also called 412-10D [VanCott et al.(1994)]					
gp120(V3)	477-D	y	L	HIGP	HIV-1 infection	human(IgG _{1κ})
	○ [Gorny et al.(1993)]					
	● Neutralizes MN; binds SF2: YIGP [Gorny et al.(1993)]					
gp120(311-324 MN)	μ5.5	y	P	RIHIGPGRAFYTTG	?	murine
	○ [D'Souza et al.(1994)]; Donors: T. Hattori, Kyoto U., Japan, and H. Schuitemaker and H. Huisman, Netherlands Red Cross					
	● μ5.5: Included in a panel of antibodies used in a multi-lab study for antibody characterization and binding and neutralization assay comparison [D'Souza et al.(1994)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	○ References					
	● Comments					
gp120(312-318 MN)	83.1	y	L P	IXIGPGR	MN V3 Peptide	murine(IgG ₁)
	○ [M. E. White-Scharf et al.(1993), Robert-Guroff et al.(1994), D'Souza et al.(1994), Moore et al.(1994a)]					
	● 83.1: Epitope defined by peptide reactivity and changes in binding affinity with substitutions [M. E. White-Scharf et al.(1993)]					
	● 83.1: MN V3 loop in a HXB2 background allows enhanced FACs labeling of infected H9 cells and increased Ab affinity [Robert-Guroff et al.(1994)]					
	● 83.1: Included in a multi-lab study for antibody characterization and binding and neutralization assay comparison [D'Souza et al.(1994)]					
	● 83.1: Shows modest cross-reactivity among B clade gp120s, little outside B clade [Moore et al.(1994a)]					
gp120(307-316 IIIB)	F58/H3	y	L P	RIQRGPGRAY	IIIB gp120	murine(IgG)
	○ [Akerblom et al.(1990), Broliden et al.(1990), D'Souza et al.(1994), Duarte et al.(1994)]					
	● F58/H3: No ADCC activity [Akerblom et al.(1990)]					
	● F58/H3: Neutralized multiple primary isolates with varying potency [Akerblom et al.(1990)]					
	● F58/H3: Included in a multi-lab study for antibody characterization and neutralization assay comparison [D'Souza et al.(1994)]					
	● F58/H3: Neutralizes IIIB but not SF2 or MN [Duarte et al.(1994)]					
gp120(307-316 IIIB)	A47/B1	y	L P	IQRGPGRAYV	IIIB gp120	murine(IgG)
	○ [Akerblom et al.(1990)]					
gp120(307-316 IIIB)	G44/H7	y	L P	IQRGPGRAYV	IIIB gp120	murine(IgG)
	○ [Akerblom et al.(1990)]					
gp120(307-316 IIIB)	D59/A2	y	L P	IQRGPGRAYV	IIIB gp120	murine(IgG)
	○ [Akerblom et al.(1990)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp120(308-316 IIIB)	IIIB-34 V3	y	L	IQRGPGRAF	Peptide	murine(IgG ₁)
	o [Laman et al.(1992)]					
	• IIIB-34 V3: Neutralizes IIIB but not MN; QXGPG are critical amino acids for binding by pepscan analysis [Laman et al.(1992)]					
gp120(308-316 IIIB)	IIIB-13 V3	y	L	IQRGPGRAF	Peptide	murine(IgG ₁)
	o [Laman et al.(1992), D'Souza et al.(1994)]					
	• IIIB-13 V3 is also known as 1044-13 (J. P. Moore, per. comm.)					
	• IIIB-13 V3: Neutralizes IIIB but not MN [Laman et al.(1992)]					
	• 1044-13: Included in a panel of antibodies used in a multi-lab study for antibody characterization and assay comparison					
gp120(V3 IIIB)	M77	y	L	IRIQRGPGRAFVTI	HIV-1 infection	human
	o [di Marzo Veronese et al.(1992), di Marzo Veronese et al.(1993)]					
	• M77: IIIB-specific MAb, immunoprecipitates deglycosylated form					
	• M77: Antibody binding to viral isolates from IIIB infected lab worker followed through time; A to T substitution resulted in the loss of neutralization and native gp120 binding, but not peptide binding [di Marzo Veronese et al.(1993)]					
gp120(V3 MN)	268-D	y	L	HIGPGR	HIV-1 infection	human(IgG _{1λ})
	o [Gorny et al.(1991), Gorny et al.(1993), Zolla-Pazner et al.(1995), VanCott et al.(1994)]					
	• 268-D: Neutralizes MN; binds SF2: YIGPGR; specificity: MN, SF2, NY5, RF, CDC4 [Gorny et al.(1993)]					
	• 268-D: Serotyping study using flow-cytometry, if H was substituted in virus, 268-D did not bind [Zolla-Pazner et al.(1995)]					
	• 268-D: Moderate dissociation rate and homologous neutralization titer [VanCott et al.(1994)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp120(V3 316-330 HXB2)	0.5 β	y	L	RGPGRAFVTIGKIG	IIIB env	murine(IgG ₁)
	o [Matsushita et al.(1988), Skinner et al.(1988), Nara et al.(1990), Emini et al.(1992)]					
	o [McKeating et al.(1992a), di Marzo Veronese et al.(1993), Moore et al.(1993b)]					
	• 0.5 β : type-specific neutralization of IIIB; does not neutralize MN or RF [Matsushita et al.(1988), Skinner et al.(1988)]					
	• 0.5 β : Emergence of virus resistant to MAb 0.5 β and autologous sera neutralization in IIIB infected chimps [Nara et al.(1990)]					
	• 0.5 β : neutralization of virus carrying a Ala to Thr substitution (contrast with MAb M77) [di Marzo Veronese et al.(1993)]					
	• 0.5 β : Binding to native gp120 100-300 fold greater than to denatured [Moore et al.(1993b)]					
gp120(V3 316-330 HXB2)	C β 1	y	L	RGPGRAFVTIGKIG	IIIB env	humanized(IgG ₁), from 0.5 β
	o [Emini et al.(1992)]					
	• C β 1: passive transfer to chimpanzees confers protection against challenge with homologous cell-free virus; mouse 0.5 β human IgG ₁ chimera [Emini et al.(1992)]					
gp120(V3 MN)	386-D	y	L	HIGPGR	HIV-1 infection	human(IgG ₁ λ)
	o [Gorny et al.(1993), VanCott et al.(1994)]					
	• 386-D: Neutralizes MN; binds SF2: YIGPGR; specificity: MN, SF2, NY5, RF, CDC4 [Gorny et al.(1993)]					
	• 386-D: Slow dissociation rate, potent homologous neutralization [VanCott et al.(1994)]					
gp120(V3)	5021	y	L	QRGPGR	peptide	murine
	o [Durda et al.(1988), Durda et al.(1990), Moore et al.(1993b)]					
gp120(V3)	5042	y	L	QRGPGR	peptide	murine
	o [Durda et al.(1988), Durda et al.(1990), Moore et al.(1993b)]					
	• 5021 and 5042: Binding to native gp120 100-300 fold greater than to denatured 314G/W substitution abolishes binding, changes outside the loop have little effect [Moore et al.(1993b)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
○ References						
● Comments						
gp120(V3)	F58/D1	y	L	IXXGPGR	virus derived gp120	human
	<ul style="list-style-type: none"> ○ [Akerblom et al.(1990), Broliken et al.(1991), Moore et al.(1993b)] ● F58/D1: Binding to native gp120 1-3 fold greater than to denatured 314G/W substitution abolishes binding, changes outside the loop have little effect [Moore et al.(1993b)] 					
gp120(V3)	P1/D12	y	L	IXXGPGR	virus derived IIIB gp120	murine(IgG)
	<ul style="list-style-type: none"> ○ [Akerblom et al.(1990), Moore et al.(1993b)] ● P1/D12: Binding to native gp120 1-3 fold greater than to denatured 314G/W substitution abolishes binding, changes outside the loop have little effect [Moore et al.(1993b)] 					
p120(V3)	P4/D10	y	L	IXXGPGR	virus derived IIIB gp120	murine(IgG)
	<ul style="list-style-type: none"> ○ [Akerblom et al.(1990), Broliken et al.(1990), Broliken et al.(1991), Moore et al.(1993b)] ● P1/D12: Binding to native gp120 3 fold greater than to denatured 314G/W substitution abolishes binding, changes outside the loop have little effect [Moore et al.(1993b)] ● Neutralizing and ADCC activity [Broliken et al.(1990)] 					
gp120(V3)	419-D	y	L	IYIGPGR	HIV-1 infection	human(IgG _{1λ})
	<ul style="list-style-type: none"> ○ [Gorny et al.(1993)] ● 419-D: Neutralizes MN; binds SF2: IYIGPGR [Gorny et al.(1993)] 					
gp120(V3)	537-D	y	L	IGPGR	HIV-1 infection	human(IgG _{1λ})
	<ul style="list-style-type: none"> ○ [Gorny et al.(1992), Gorny et al.(1993), VanCott et al.(1994)] ● 537-D: MN type specific neutralization observed; binds SF2: IGPGR [Gorny et al.(1992), Gorny et al.(1993)] ● 537-D: moderate homologous neutralization, relatively rapid dissociation constant [VanCott et al.(1994)] 					
gp120(V3 MN)	NM-01	y	L	GPGR	IIIB MN	murine(IgG)
	<ul style="list-style-type: none"> ○ [Ohno et al.(1991)] 					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
gp120(V3 MN)	447-52D	y	L P	GPXR	HIV-1 infection	human(IgG _{3λ})
		○ References				
		● Comments				
gp120(308-313 MN)	59.1	y	L	GPGRAF	Peptide	murine(IgG ₁)
		○ [M. E. White-Scharf et al.(1993), Bou-Habib et al.(1994), D'Souza et al.(1994)]				
		● 59.1: Epitope defined by peptide reactivity and binding affinity with amino acid substitutions [M. E. White-Scharf et al.(1993)]				
		● 59.1: Greater affinity for T cell tropic strain T-CSF than the primary isolate JR-CSF, from which T-CSF was derived [Bou-Habib et al.(1994)]				
		● 59.1: Multi-lab study for antibody characterization and assay comparison; neutralizes MN and IIIB [D'Souza et al.(1994)]				

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp120(V3 MN)	50.1	y	L	RIHIG	V3 MN peptide	murine(IgG ₁)
	o [M. E. White-Scharf et al.(1993), Bou-Habib et al.(1994), Robert-Guroff et al.(1994)]					
	o [Moore et al.(1994a), VanCott et al.(1994)]					
	• 50.1: Epitope defined by peptide reactivity & changes affinity with amino acid substitutions [M. E. White-Scharf et al.(1993)]					
	• 50.1: No neutralization of primary isolate JR-CSF; greater affinity for and neutralization of T cell tropic strain T-CSF, derived from JR-CSF [Bou-Habib et al.(1994)]					
	• 50.1: Potent MN neutralization, slow dissociation rate [VanCott et al.(1994)]					
	• 50.1: Chimeric MN V3 loop in an HXB2 background allows increased FACS signal, Ab affinity, and viral neutralization [Robert-Guroff et al.(1994)]					
	• 50.1: Shows modest cross-reactivity among B clade gp120s, little outside B clade [Moore et al.(1994a)]					
gp120(V3 MN)	58.2	y	L P	HIGPGRAF	MN V3 peptide	murine(IgG ₁)
	o [M. E. White-Scharf et al.(1993), Moore et al.(1994a)]					
	• 58.2: Epitope defined by peptide reactivity and changes in affinity with amino acid substitutions [M. E. White-Scharf et al.(1993)]					
	• 58.2: Modest cross-reactivity among B clade gp120s, little outside B clade; gives epitope as I-IHIG [Moore et al.(1994a)]					
gp120(IIIB V3)	694/98-D	y	L	GRAF	HIV-1 infection	human(IgG _{1λ})
	o [Gorny et al.(1992), Gorny et al.(1993), Laal et al.(1994), VanCott et al.(1994), Zolla-Pazner et al.(1995)]					
	• 694/98-D: Type specific lab isolate neutralization was observed [Gorny et al.(1992)]					
	• 694/98-D: Neutralizes MN and IIIB: GRAF; binds SF2: GRAF; specificity: MN, IIIB, SF2, NY5, RF, CDC4, WM52. [Gorny et al.(1993)]					
	• 694/98-D: Potent neutralization of IIIB; no neutralization synergy in combination with CD4 binding domain MAb's [Laal et al.(1994)]					
	• 694/98-D: GRVY did not alter peptide binding; GRVI and GQAW enhanced dissociation; GQVF and GQAL did not bind [VanCott et al.(1994)]					
	• 694/98-D: Serotyping study using flow-cytometry; bound GRAX bearing virus in 10/11 cases; somewhat conformation dependent [Zolla-Pazner et al.(1995)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
		o References				
		• Comments				
gp120(IIIB V3)	9205	y	L	RAF	IIIB V3 Peptide	murine(IgG ₁)
		o [Durda et al.(1990), VanCott et al.(1994)]				
		• 9205: Neutralizes IIIB but not MN; significantly slower dissociation constant for IIIB than MN [VanCott et al.(1994)]				
gp120(361-380 LAI)	4D7/4	y	?	IFKQSSGGDPEIVTHSFNCGG	env glycoprotein	murine(IgG)
		o [Moore et al.(1994b)]; Donor: S. Ranjbar, NIBSC, UK				
		• 4D7/4; C3 region; the relative affinity for denatured/native gp120 is >10				
gp120(362-381 LAI)	36.1(ADP 329)	y	?	FKQSSGGDPEIVTHSFNCGGE	env glycoprotein	murine(IgG)
		o [Moore et al.(1994b), Thiriart et al.(1989)]				
		• 36.1: The relative affinity for denatured/native gp120 is >30; mutations 380 G/F, 381 E/P impair binding				
gp120(362-381 LAI)	C12	y	?	FKQSSGGDPEIVTHSFNCGGE	mis-folded LAI rgp160	murine(IgG ₁)
		o [Moore et al.(1994b), Abacioglu et al.(1994), Moore et al.(1994c)]				
		• C12: The relative affinity for denatured/native gp120 is >30; mutations 380 G/F, 381 E/P, and 384 Y/E impair binding; also binds GEFFYCNSTQLFNS, gp120(380-393 LAI) [Moore et al.(1994b)]				
		• C12: C3 region; epitope boundaries mapped by peptide scanning, core FNCGG [Abacioglu et al.(1994)]				
gp120(380-393 LAI)	110.D	y	?	GEFFYCNSTQLFNS	env glycoprotein	murine(IgG)
		o [Moore et al.(1994b)]; Donor: F. Traincard, Pasteur Institute, France				
		• 110.D: The relative affinity for denatured/native gp120 is >50 [Moore et al.(1994b)]				

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
gp120(380-393 LAI)	B32	y	?	GEFFYCNSTQLFNS	mis-folded LAI rgp160	murine(IgG ₁)
	o References				o [Moore et al.(1994b), Abacioglu et al.(1994)]	
	• Comments				• B32: The relative affinity for denatured/native gp120 is >100; mutations 380 G/F, 381 G/P, 382 F/L, 384 Y/E, and 386 N/R impair binding [Moore et al.(1994b)]	
gp120(395-400 BH10)	B15	y	?	WFNSTW	mis-folded LAI rgp160	murine(IgG _{2b})
	o References				o [Abacioglu et al.(1994), Moore et al.(1993b)]	
	• Comments				• B15: V4 region; epitope boundaries mapped by peptide scanning [Abacioglu et al.(1994)]	
					• B15: Binds native BH10 gp120 with 5 fold less affinity than denatured, but does not bind native or denatured MN gp120 [Moore et al.(1993b)]	
gp120(395-400 BH10)	B34	y	?	WFNSTW	mis-folded LAI rgp160	murine(IgG _{2b})
	o References				o [Abacioglu et al.(1994)]	
	• Comments				• B34: V4 region; epitope boundaries mapped by peptide scanning [Abacioglu et al.(1994)]	

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
gp120(423-437 IIIB)	G3-211	y	L	IINMWQKVGKAMYAP	virus derived IIIB gp120	murine(IgG ₁)
	o [Sun et al.(1989)]					
gp120(423-437 IIIB)	G3-536	y	L	IINMWQKVGKAMYAP	virus derived IIIB gp120	murine(IgG ₁)
	o [Sun et al.(1989)]					
gp120(423-437 IIIB)	G3-537	y	L	IINMWQKVGKAMYAP	virus derived IIIB gp120	murine(IgG ₁)
	o [Sun et al.(1989)]					
	• G3-42, 211, 299, 508, 519, 536, 537: Cross-react with diverse strains by immunofluorescence; block binding of HIV to CD4+ cells, but show different behaviors in terms of neutralization efficiency [Sun et al.(1989)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	○ References					
	● Comments					
gp120(429-443)	MO86/C3	y	?	EVGKAMYAPPISGQI	rec pB1 (IIIB env 286-467)	human(IgM)
	○ [Ohlin et al.(1992)]					
	● MO86: generated through <i>in vitro</i> “immunization” of uninfected-donor lymphocytes					
gp120(429-438 BRU)	G3-42	y	L	EVGKAMYAPP	virus derived IIIB gp120	murine(IgG ₁)
	○ [Sun et al.(1989), Moore et al.(1993b)]					
	● G3-42: Neutralization of IIIB but not RF [Sun et al.(1989)]					
	● G3-42: C4 region; binds HXB2 20mer KQIINMWQKVKGKAMYAPPIS, and SF-2 and MN gp120s (note E/K change); G3-42, G3-299 have a lower affinity than G3-508, G3-519, and G3-536					
	bound well only to native gp120, not denatured; poor peptide binding, epitope spans V3-C4 regions; 433A/L, 435Y/H and 430V/S substitutions impaired binding, V3 loop insertion abolished binding [Moore et al.(1993b)]					
gp120(429-438 BRU)	G3-299	y	L	EVGKAMYAPP	virus derived IIIB gp120	murine(IgG ₁)
	○ [Sun et al.(1989), Moore et al.(1993b)]					
	● G3-299: Best neutralization of IIIB in panel of 7 MAbs that bind overlapping epitope [Sun et al.(1989)]					
	● G3-299: C4 region; binds HXB2 20mer KQIINMWQKVKGKAMYAPPIS, and SF-2 and MN gp120s (note E/K change); G3-42, G3-299 have a lower affinity than G3-508, G3-519, and G3-536					
	bound well only to native gp120, not denatured; poor peptide binding, epitope spans V3-C4 regions; 433A/L, 435Y/H and 430V/S substitutions impaired binding, V3 loop cleavage or insertion abolished binding [Moore et al.(1993b)]					
gp120(429-438 BRU)	G3-508	y	L	EVGKAMYAPP	virus derived IIIB gp120	murine(IgG ₁)
	○ [Sun et al.(1989), Moore et al.(1993b)]					
	● G3-508: Neutralization of IIIB and RF [Sun et al.(1989)]					
	● G3-508: C4 region; binds HXB2 20mer KQIINMWQKVKGKAMYAPPIS, and SF-2 and MN gp120s (note E/K change); bound denatured with 10 fold greater affinity than native; 433A/L, 435Y/H and 430V/S substitutions impaired binding [Moore et al.(1993b)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	○ References					
	● Comments					
gp120(429-438 BRU)	G3-519	y	L	EVGKAMYAPP	virus derived IIIB gp120	murine(IgG ₁)
	○ [Sun et al.(1989), Moore et al.(1993b), D'Souza et al.(1994)]					
	● G3-519: Best neutralization of RF in panel of 7 MAbs that bind overlapping epitope [Sun et al.(1989)]					
	● G3-519: C4 region; binds HXB2 20mer KQIINMWQKVKGKAMYAPPIS, and SF-2 and MN gp120s (note E/K change); bound denatured with 5 fold greater affinity than native; 433A/L, 435Y/H, 438P/R and 430V/S substitutions impaired binding [Moore et al.(1993b)]					
	● G3-519: Included in a multi-lab study for antibody characterization, binding, and neutralization assay comparison, also binds IIIB: IINMWQKVKGKAMYAPP [D'Souza et al.(1994)]					
gp120(429-438 BRU)	G3-536	y	L	EVGKAMYAPP	virus derived IIIB gp120	murine(IgG ₁)
	○ [Sun et al.(1989), McKeating et al.(1992b), Moore et al.(1993b)]					
	● G3-536: Weak neutralization of IIIB and RF [Sun et al.(1989)]					
	● G3-536: C4 region; binds HXB2 20mer KQIINMWQKVKGKAMYAPPIS, and SF-2 and MN gp120s					
	● 536: Weakly neutralizing; binds to a linear determinant in the CD4 binding domain of gp120 [McKeating et al.(1992b)] (note E/K change); bound denatured with 15 fold greater affinity than native; 433A/L, 435Y/H, 438P/R, and 430V/S substitutions impaired binding [Moore et al.(1993b)]					
gp120(430-447 BRU)	G3-537	y	L	NMWQEVGKAMYAPPISG	gp120	
	○ [McKeating et al.(1992b), Sun et al.(1989)]					
	Weakly neutralizing. Binds to a linear determinant in the CD4 binding domain of gp120 [McKeating et al.(1992b)]					
gp120(429-438 BRU)	ICR38	y	?	EVGKAMYAPP	rec BH10 gp120	rat(IgG _{2b})
	○ [Cordell et al.(1991), Moore et al.(1993b), McKeating et al.(1992b), McKeating et al.(1992a), McKeating et al.(1993b)]					
	● ICR38: Unreactive with solid-phase decamer peptide, competed in solution phase assay; [Moore et al.(1993b)]					
	● ICR38.1a: weakly neutralizing; binds linear determinant in the CD4 binding domain [McKeating et al.(1992b), Cordell et al.(1991)]					
	● ICR38.1a: studied in the context of a neutralization escape mutant [McKeating et al.(1993a)]					
	● ICR38.1a: Unable to exert a synergistic effect in combination with V3 directed MAbs, in contrast to MAb 39.13g, that binds to a conformational epitope involved in CD4 binding [McKeating et al.(1992a)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
gp120(429-438 BRU)	G45-60	y	L	GKAMYAPPIS	virus derived IIIB gp120	murine(IgG ₁)
	o References			[Sun et al.(1989), Moore et al.(1993b)]		
	• Comments			• G45-60: binds HXB2 20mer KQIINMWQKVKGKAMYAPPI, decamer flanking peptides also bound; bound equivalently to native and denatured gp120 433A/L and 435Y/H (not 430V/S) substitutions impaired binding [Moore et al.(1993b)]		
gp120(CD4 binding site IIIB)	1662	y	N	AMYAPPI	poliovirus-antigen chimera	
	o [McKeating et al.(1992b)]					
gp120(CD4 binding site IIIB)	1663	y	N	AMYAPPI	poliovirus-antigen chimera	
	o [McKeating et al.(1992b)]					
gp120(CD4 binding site IIIB)	1664	y	N	AMYAPPI	poliovirus-antigen chimera	
	o [McKeating et al.(1992b)]					
gp120(CD4 binding site IIIB)	1697	y	N	AMYAPPI	poliovirus-antigen chimera	
	o [McKeating et al.(1992b)]					
gp120(CD4 binding site IIIB)	1794	y	N	AMYAPPISGQ	poliovirus-antigen chimera	
	o [McKeating et al.(1992b)]					
gp120(CD4 binding site IIIB)	1804	y	N	AMYAPPISGQ	poliovirus-antigen chimera	
	o [McKeating et al.(1992b)]					
gp120(CD4 binding site IIIB)	1807	y	N	AMYAPPISGQ	poliovirus-antigen chimera	
	o [McKeating et al.(1992b)]					
gp120(CD4 binding site IIIB)	1808	y	N	AMYAPPISGQ	poliovirus-antigen chimera	
	o [McKeating et al.(1992b)]					
	• 1662, 1663, 1664, 1697, 1794, 1804, 1807, 1808: Did not bind to native gp120, epitope not exposed on native protein [McKeating et al.(1992b)]					

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	○ References					
	● Comments					
gp120(425-441 IIIB)	1795	y	L	NMWQEVGKAMYAPPISG	polio S1/env/4 chimera	
	○ [McKeating et al.(1992b)]					
	● 1795: CD4 binding site; weakly neutralizing; binding inhibited by WQEVGKAMYA, GKAM may be involved [McKeating et al.(1992b)]					
gp120(412-453)	13H8	y	L	GKAMYAPPIS	rgp120 MN	murine(IgG)
	○ [Nakamura et al.(1993), Nakamura et al.(1992)]					
	● 13H8: Cross blocks 5C2 in IIIB-rsgp160 ELISA; reactive with diverse strains in rgp120 ELISA [Nakamura et al.(1992)]					
	● 13H8: Bound diverse strains, neutralizing activity against MN [Nakamura et al.(1993)]					
	● 13H8: Binds V3 and C4 peptides (J. P. Moore, per. comm.)					
gp120(451-470 LAI)	M91	y	n	SNNESEIFRL	HIV-1 451 env	rat(IgG _{2a})
	○ [Moore et al.(1994b), di Marzo Veronese et al.(1992), Moore et al.(1994c)]					
	● M91: The relative affinity for denatured/native gp120 is 24; mutation in position 470 P/L impairs binding [Moore et al.(1994b)]					
	● M91: Immunoblot reactive, RIP negative, but precipitates deglycosylated gp120; reacts with strains IIIB, 451, MN, RF, and RUTZ [di Marzo Veronese et al.(1992)]					
gp120(451-470 LAI)	CRA1(ADP 323)	y	?	SNNESEIFRL	env glycoprotein	murine(IgG)
	○ [Moore et al.(1994b), Moore et al.(1994c)]; Donor: M. Page, NIBSC, UK					
	● CRA1: The relative affinity for denatured/native gp120 is 24; mutations 470 P/L or G, 475 M/S impairs binding to the native form; only mutation 470 P/L impairs binding to the denatured form [Moore et al.(1994b)]					
gp120(471-490 LAI)	9301	y	?	GGGDMDRDWRSELYKYKVVK	env glycoprotein	murine(IgG)
	○ [Moore et al.(1994b), Skinner et al.(1988), Moore et al.(1994c)]; Dupont, commercial					
	● 9301: The relative affinity for denatured/native gp120 is 19 [Moore et al.(1994d)]					

HIV Peptide-Reactive Monoclonal Antibodies

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
gp120(490-508)	M38	y	n	KYKVVKEIPLGVAPTKAKRR	IIIB immunization o [DeSantis et al.(1994), Lopalco et al.(1993), Grassi et al.(1991), Beretta et al.(1987)] • M38: binds to the carboxy terminus of gp120, in a gp41 binding region, and also to denatured human HLAs (antigenic homology) [Lopalco et al.(1993)] • M38: Infected individuals have HLA class I-gp120 cross-reactive antibodies [DeSantis et al.(1994)]	murine()
gp120(471-490 LAI)	1C1	y	?	GGGDMRDNRSELKYKVVK	env glycoprotein o [Moore et al.(1994b), Moore et al.(1994c)]; Repligen Inc, commercial • 1C1: The relative affinity for denatured/native gp120 is 15 [Moore et al.(1994b)]	murine (IgG)
gp120(471-490 LAI)	221(ADP 301)	y	?	GGGDMRDNRSELKYKVVK	env glycoprotein o [Moore et al.(1994b), Moore et al.(1994c)]; Donor: C. Bruck, SKB, Belgium • 221; The relative affinity for denatured/native gp120 is 12; mutation 477 D/V impairs binding [Moore et al.(1994b)]	murine (IgG)
gp120(471-490 LAI)	660-178	y	?	GGGDMRDNRSELKYKVVK	envelope glycoprotein o [Moore et al.(1994b)]; Donor: G. Robey, Abbott Labs • 660-178: The relative affinity for denatured/native gp120 is >100 [Moore et al.(1994b)]	murine(IgG)
gp120(471-490 LAI)	8C6/1	y	?	GGGDMRDNRSELKYKVVK	env glycoprotein o [Moore et al.(1994b)]; Donor: S. Ranjbar, NIBSC, UK • 8C6/1: V5-C5 region; preferentially binds SDS-DTT denatured gp120 (<30 fold); mutation 485 K/V impairs binding [Moore et al.(1994b)]	murine(IgG)
gp120(471-490 LAI)	5F4/1	y	?	GGGDMRDNRSELKYKVVK	Peptide o [Moore et al.(1994b)]; Donor: S. Ranjbar, NIBSC, UK • 5F4/1: V5-C5 region; preferentially binds SDS-DTT denatured gp120 (<10 fold); mutation 485 K/V impairs binding [Moore et al.(1994b)]	murine
gp120(471-490 LAI)	3F5	y	?	GGGDMRDNRSELKYKVVK	envelope o [Moore et al.(1994b)]; Donor: S. Nigida, NCI, USA • 3F5: The relative affinity for denatured/native gp120 is 100 [Moore et al.(1994b)]	murine(IgG)
gp120(314-323 & 494-503)	MO101/V3,C4	y	?	GRAFVTIGKI & LGVAPTKAKR	rec pB1 (IIIB env 286-467)	human(IgM) o [Ohlin et al.(1992)] • MO101: generated through <i>in vitro</i> "immunization" of uninfected-donor lymphocytes: reacts with peptides from the V3 and C4 regions [Ohlin et al.(1992)]

gp120 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp120(472-491 LAI)	W2	y	?	GGDMRDNRSELYKYKVVKI	envelope	murine(IgG)
	o [Moore et al.(1994b)]; Donor: D. Weiner, U. Penn., USA					
	• W2: The relative affinity for denatured/native gp120 is 30; mutation 485 K/V impairs binding [Moore et al.(1994b)]					
gp120(491-500 LAI)	RV110026	y	?	IEPLGVAPTK	Peptide	human
	o [Moore et al.(1994b), Moore et al.(1994c)]; Commercial, Olympus Inc					
	• RV110026: Preferentially binds SDS-DTT denatured gp120 (15 fold using R1/87 as capture reagent) [Moore et al.(1994b)]					
gp120(491-500 LAI)	110.1	y	?	IEPLGVAPTK	BRU infected cell lysates	murine(IgG ₁)
	o [Kinney Thomas et al.(1988), Moore et al.(1994d)]					
	• 110.1: The relative affinity for denatured/native gp120 is 0.7 [Moore et al.(1994b)]					
gp120(487-509)	450-D	y	N	RRVVQRE	HIV-1 infection	human(IgG _{1λ})
	o [Karwowska et al.(1992), Laal et al.(1994)]					
	• 450-D: bound to MN, SF-2 and IIIB, but was not neutralizing [Karwowska et al.(1992)]					
	• 450-D: not neutralizing alone, could synergize anti-CD4 binding site antibody neutralization [Laal et al.(1994)]					
gp120(503-509)	722-D	y	N	RRVVQRE	HIV-1 infection	
	o [Laal et al.(1994)]					
	• 722-D: not neutralizing alone, could synergize anti-CD4 binding site antibody neutralization [Laal et al.(1994)]					
gp120(C terminus)	670-D	y	?	PTKAKRR	HIV-1 infection	human(IgG)
	o [Zolla-Pazner et al.(1995)]					
	• 670-D: Group specific cross-clade binding in serotyping study using flow-cytometry [Zolla-Pazner et al.(1995)]					
gp120(C terminus)	858-D	y	?	VVQREKRR	HIV-1 infection	human(IgG)
	o [Zolla-Pazner et al.(1995)]					
	• 858-D: Group specific cross-clade binding in serotyping study using flow-cytometry [Zolla-Pazner et al.(1995)]					
gp120(C terminus)	989-D	y	?	VVQREKRR	HIV-1 infection	human(IgG)
	o [Zolla-Pazner et al.(1995)]					
	• 989-D: In serotyping study using flow-cytometry, showed B clade specificity, but only reacted with 7/11 B clade virus [Zolla-Pazner et al.(1995)]					

gp41 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp41(526-543 BH10)	5F3	y	?	AAGSTMGAASMTLTVQARQ	HIV-1 infection	human(IgG _{1κ})
	o [Buchacher et al.(1994)]					
	• 5F3: Human MAbs against HIV generated by electrofusion of PBLs from HIV-1+ volunteers with CB-F7 cells [Buchacher et al.(1994)]					
gp41(526-543 BH10)	25C2	y	n	AAGSTMGAASMTLTVQARQ	HIV-1 infection	human(IgG _{1κ})
	o [Buchacher et al.(1992), Buchacher et al.(1994), Sattentau et al.(1995)]					
	• 25C2: Human MAbs against HIV generated by electrofusion of PBLs from HIV-1 positive volunteers with CB-F7 cells; binds oligomeric and monomeric gp41, as well as whole gp160 [Buchacher et al.(1994)]					
	• 25C2: Binding domain overlaps sites that are critical for gp120-gp41 association; Binding is enhanced by sCD4 [Sattentau et al.(1995)]					
gp41(526-543 BH10)	24G3	y	n	AAGSTMGAASMTLTVQARQ	HIV-1 infection	human(IgG _{1κ})
	o [Buchacher et al.(1992), Buchacher et al.(1994)]					
	• 24G3: Human MAbs against HIV generated by electrofusion of PBLs from HIV-1+ volunteers with CB-F7 cells [Buchacher et al.(1994)]					
gp41(526-543 BH10)	1A1	y	?	AAGSTMGAASMTLTVQARQ	HIV-1 infection	human(IgG _{1κ})
	o [Buchacher et al.(1994)]					
	• 1A1: Human MAb against HIV generated using EBV transformation of PBLs from HIV-1+ volunteers [Buchacher et al.(1994)]					
gp41(577-596 BRU)	PC5009	y	?	GIKQLQARILAVERYLKDQQ	rec gp160	murine
	o [Poumbourios et al.(1992)]					
	• PC5009: Recognized only monomeric gp41, apparently unrecognizable with oligomer [Poumbourios et al.(1992)]					
gp41(566-586 BRU)	α(566-586)	n	?	AQQHLLQLTVWGIKQLQARIL	HIV-1 infection	human
	o [Poumbourios et al.(1992)]					
gp41(577-596 BRU)	α(577-596)	n	?	GIKQLQARILAVERYLKDQQ	HIV-1 infection	human
	o [Poumbourios et al.(1992)]					
	• α(577-596) and α(566-586): affinity purified from HIV-1+ plasma; preferentially bind oligomer [Poumbourios et al.(1992)]					

gp41 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	<ul style="list-style-type: none"> ○ References ● Comments 					
gp41(598-609)	α(598-609)	n	?	GIWGCSGK	HIV-1 infection	human
	<ul style="list-style-type: none"> ○ [Poumbourios et al.(1992)] ● α(598-609) was affinity purified from HIV-1+ plasma; immunodominant region, binds oligomer and monomer [Poumbourios et al.(1992)] 					
gp41(584-606 BRU)	2A2/26	y	?	RILAVERYLKDQQQLLGIGWGCSGK	viral gp41	murine
	<ul style="list-style-type: none"> ○ [Poumbourios et al.(1992)] ● 2A2/26: Immunodominant region, binds both oligomer and monomer [Poumbourios et al.(1992)] 					
gp41(579-604 HXB2)	98-43	y	n	RILAVERYLKDQQQLLGIGWGCSGKLIC	HIV-1 infection	human(IgG _{2κ})
	<ul style="list-style-type: none"> ○ [Tyler et al.(1990), Xu et al.(1991), Gorny et al.(1989)] ● 98-43: Poor ADCC (in contrast to MAb 120-16, gp41(644-663)) [Tyler et al.(1990)] ● 98-43: 579-604 is an immunodominant region; Abs in human serum 100 fold higher to this region than downstream immunogenic region [Xu et al.(1991)] 					
gp41(591-597 HXB2)	181-D	y	?	QLLGIWG	HIV-1 infection	human(IgG _{2κ})
	<ul style="list-style-type: none"> ○ [Xu et al.(1991)] ● 181-D: Fine mapping indicates core is LLGIW; [Xu et al.(1991)] 					
gp41(592-600 HXB2)	240-D	y	?	LLGIWGCSG	HIV-1 infection	human(IgG _{1κ})
	<ul style="list-style-type: none"> ○ [Xu et al.(1991)] ● 240-D: Fine mapping indicates core is IWG [Xu et al.(1991)] 					
gp41(579-604 HXB2)	246-D	y	?	QQLLGIWG	HIV-1 infection	human(IgG _{1κ})
	<ul style="list-style-type: none"> ○ [Xu et al.(1991)] ● 246-D: Fine mapping indicates core is LLGI [Xu et al.(1991)] 					

gp41 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
gp41(579-613 BH10)	1H5	y	n	ARILAVERYLKDQQQLLG IWGCSGKLICTTAVPWNA	HIV-1 infection	human(IgG ₁ (κ))
		○ [Buchacher et al.(1992), Buchacher et al.(1994)]				
gp41(579-613 BH10)	1F11	y	n	ARILAVERYLKDQQQLLG IWGCSGKLICTTAVPWNA	HIV-1 infection	human(IgG ₁ (κ))
		○ [Buchacher et al.(1992), Buchacher et al.(1994)]				
gp41(579-613 BH10)	4D4	y	n	ARILAVERYLKDQQQLLG IWGCSGKLICTTAVPWNA	HIV-1 infection	human(IgG ₁ (λ))
		○ [Buchacher et al.(1992), Buchacher et al.(1994)]				
gp41(579-613 BH10)	3D9	y	n	ARILAVERYLKDQQQLLG IWGCSGKLICTTAVPWNA	HIV-1 infection	human(IgG ₁ (κ))
		○ [Buchacher et al.(1992), Buchacher et al.(1994)]				
gp41(579-613 BH10)	4G2	y	n	ARILAVERYLKDQQQLLG IWGCSGKLICTTAVPWNA	HIV-1 infection	human(IgG ₁ (κ))
		○ [Buchacher et al.(1992), Buchacher et al.(1994)]				
gp41(579-613 BH10)	4B3	y	n	ARILAVERYLKDQQQLLG IWGCSGKLICTTAVPWNA	HIV-1 infection	human(IgG ₁ (λ))
		○ [Buchacher et al.(1992), Buchacher et al.(1994)]				
		● 1H5, 1F11, 4D4, 3D9, 4G2, 4B3: human MAbs against HIV generated by electrofusion of PBLs from HIV-1 positive volunteers with CB-F7 cells [Buchacher et al.(1994)]				

gp41 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp41(584-609)	41-1	y	?	RILAVERYLKDQQQLLGIGWCGSGKLIC	gp160	murine(IgG ₁)
	o [Mani et al.(1994)]					
	• 41-1: did not require the Cys-Cys disulfide bridge and loop formation, can bind simultaneously with 9-11 [Mani et al.(1994)]					
gp41(584-609)	9-11	y	?	RILAVERYLKDQQQLLGIGWCGSGKLIC	gp160	murine(IgG ₁)
	o [Mani et al.(1994)]					
	9-11: required the Cys-Cys disulfide bridge and loop formation, can bind simultaneously with 41-1 [Mani et al.(1994)]					
gp41(596-599 IIIB)	9G5A	y	P?	QLLG	Anti-idiotype against M38	murine(IgM)
	o [Lopalco et al.(1993)]					
	• 9G5A: Anti-idiotype to gp120 C terminus (C5 region) MAb M38 [Lopalco et al.(1993)]					
gp41(644-663 HXB2)	120-16	y	n	SLIEESQNQQEKNEQELLEL	HIV-1 infection	human(IgG ₂)
	o [Tyler et al.(1990), Xu et al.(1991)]					
	• 120-16: Good ADCC (in contrast to MAb 98-43, gp41(579-604)) [Tyler et al.(1990)]					
	• 120-16: Less reactive region than Avery region; most Abs involving this region were conformational [Xu et al.(1991)]					

gp41 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	○ References					
	● Comments					
gp41(662-667 BH10)	2F5	y	L P	ELDKWA	HIV-1 infection	human(IgG _{3(κ)})
	○ [Buchacher et al.(1992), Muster et al.(1993), Purtscher et al.(1994), Laal et al.(1994)]					
	○ [Buchacher et al.(1994), D'Souza et al.(1994), Trokla et al.(1995), Sattentau et al.(1995)]					
	● 2F5: Broadly reactive neutralizing activity, ELDKWA is relatively conserved; neutralized 2 primary isolates [Purtscher et al.(1994)]					
	● 2F5: Failed to show synergy with anti-CD4 binding site neutralizing antibodies [Laal et al.(1994)]					
	● 2F5: Human MAbs against HIV generated by electrofusion of PBLs from HIV-1 positive volunteers with CB-F7 cells [Buchacher et al.(1994)]					
	● 2F5: DKWA defined as the core sequence; highly conserved neutralizing MAb [Buchacher et al.(1992), Muster et al.(1993)]					
	● 2F5: Included in a multi-lab study for antibody characterization binding and neutralization assay comparison [D'Souza et al.(1994)]					
	● 2F5: Cross-clade neutralizing activity; LDKW defined as the core epitope [Trokla et al.(1995)]					
	● 2F5: Exposed in the presence of gp120 on the cell surface, while most of gp41 is masked [Sattentau et al.(1995)]					
gp41(662-667 BH10)	?	n	L	ELDKWA	chimeric influenza virus/ELDKWA	murine(IgG,IgA)
	○ [Muster et al.(1995), Muster et al.(1994)]					
	● Sustained ELDKWA specific IgA response in mucosa of immunized mice [Muster et al.(1995)]					
gp41(720-734 BH10)	B30	y	?	HLPIPRGPDRPEGIE	mis-folded LAI rgp160	murine(IgG ₁)
	○ [Abacioglu et al.(1994)]					
	● B30: Epitope boundaries mapped by peptide scanning [Abacioglu et al.(1994)]					
gp41(727-734 BH10)	B31	y	?	PDRPEGIE	mis-folded LAI rgp160	murine(IgG ₁)
	○ [Abacioglu et al.(1994)]					
gp41(727-734 BH10)	B33	y	?	PDRPEGIE	mis-folded LAI rgp160	murine(IgG ₁)
	○ [Abacioglu et al.(1994)]					
gp41(727-732 BH10)	C8	y	?	PDRPEG	mis-folded LAI rgp160	murine(IgG ₁)
	○ [Abacioglu et al.(1994)]					

gp41 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
	o References					
	• Comments					
gp41(733-741 BH10)	B8	y	?	IEEEEGGERD	mis-folded LAI rgp160	murine(IgG1)
	o [Abacioglu et al.(1994)]					
	• B31, B33, C8 and B8: Epitope boundaries mapped by peptide scanning [Abacioglu et al.(1994)]					
gp41(735-752 IIIB)	LA9	y	L	DRPEGIEEGGERDRDRS	?	murine(IgM)
	o [Evans et al.(1989)]					
gp41(735-752 IIIB)	ED6	y	L	DRPEGIEEGGERDRDRS	?	murine(IgM)
	o [Evans et al.(1989)]					
gp41(735-752 IIIB)	1575	y	L	DRPEGIEEGGERDRDRS	Poliovirus/gp41 epitope chimera	murine
	o [Evans et al.(1989), Vella et al.(1993)]					
	• 1575: Neutralizing activity, less broad than 1577 [Evans et al.(1989)]					
	• 1575: Core epitope: IEEE; neutralized IIIB, but not RF or MN [Vella et al.(1993)]					
gp41(735-752 IIIB)	1576	y	n	DRPEGIEEGGERDRDRS	Poliovirus/gp41 epitope chimera	murine
	o [Vella et al.(1993)]					
	• 1576: Not neutralizing [Vella et al.(1993)]					
gp41(735-752 IIIB)	1577	y	L	DRPEGIEEGGERDRDRS	Poliovirus/gp41 epitope chimera	murine
	o [Evans et al.(1989)]					
	• 1577: Raised against IIIB peptide chimera; neutralized African and American HIV-1 lab strains [Evans et al.(1989)]					
	• 1577: Core epitope: ERDRD; could neutralize HIV IIIB and HIV RF [Vella et al.(1993)]					
gp41(735-752 IIIB)	1578	y	L?	DRPEGIEEGGERDRDRS	Poliovirus/gp41 epitope chimera	murine
	o [Evans et al.(1989), Vella et al.(1993)]					
	• 1578: No neutralizing activity; epitope may be formed by regions from both poliovirus and HIV [Evans et al.(1989)]					
	• 1578: Core epitope: IEEE; in this study, neutralized IIIB, but not RF or MN [Vella et al.(1993)]					
gp41(735-752 IIIB)	1899	y	L	DRPEGIEEGGERDRDRS	Poliovirus/gp41 epitope chimera	murine
	o [Vella et al.(1993)]					
	• 1899: Could neutralize HIV IIIB and HIV RF [Vella et al.(1993)]					
gp41(735-752 IIIB)	1579	y	L	DRPEGIEEGGERDRDRS	Poliovirus/gp41 epitope chimera	murine
	o [Vella et al.(1993)]					
	• 1579: Core epitope: IEEE; neutralized IIIB, but not RF or MN [Vella et al.(1993)]					

gp41 Antibody-Peptide Reactivity

Location	Name	MAb	NAb	Peptide	Immunogen	Species(isotype)
gp41(735-752 IIIB)	1583	y	L	DRPEGIEEGGERDRDRS	Poliovirus/gp41 epitope chimera	murine
	o References				o [Evans et al.(1989), Vella et al.(1993), Sattentau et al.(1995)]	
	• Comments				• 1583: Neutralizing activity, less broad than 1577 [Evans et al.(1989)]	
					• 1583: Core epitope: ERDRD; Could neutralize HIV IIIB but not HIV RF [Vella et al.(1993)]	
					• 1583: Cytoplasmic domain, epitope not exposed at the surface of HIV-1 infected cells [Sattentau et al.(1995)]	
gp41(735-752 IIIB)	1907	y	n	DRPEGIEEGGERDRDRS	Poliovirus/gp41 epitope chimera	murine
	o References				o [Vella et al.(1993)]	
	• Comments				• 1907: Could not neutralize HIV IIIB, RF or MN [Vella et al.(1993)]	
gp41(735-752 IIIB)	1908	y	L	DRPEGIEEGGERDRDRS	Poliovirus/gp41 epitope chimera	murine
	o References				o [Sattentau et al.(1995), Vella et al.(1993)]	
	• Comments				• 1908: Neutralized IIIB, but not RF or MN [Vella et al.(1993)]	
					• 1908: Cytoplasmic domain, epitope not exposed at the surface of HIV-1 infected cells [Sattentau et al.(1995)]	
gp41(735-752 IIIB)	1909	y	L	DRPEGIEEGGERDRDRS	Poliovirus/gp41 epitope chimera	murine
	o References				o [Vella et al.(1993)]	
	• Comments				• 1909: Neutralized HIV IIIB but not HIV RF [Vella et al.(1993)]	
gp41(824-830 BH10)	4E10	y	L	AEGTDRV	HIV-1 infection	human(IgG3(κ))
	o References				o [Buchacher et al.(1992), Buchacher et al.(1994), D'Souza et al.(1994)]	
	• Comments				• 4E10: Human MAbs against HIV generated by electrofusion of PBLs from HIV-1+ volunteers with CB-F7 cells	
					4E10 also binds to MHC class II proteins; anti-class II Abs are only found in HIV-1 positive people [Buchacher et al.(1994)]	
					• 4E10: Included in a multi-lab study for antibody characterization, binding and neutralization assay comparison [D'Souza et al.(1994)]	

Nef Antibody-Peptide Reactivity

Location	Name	MAb	Peptide	Immunogen	Species(isotype)
			o References		
			• Comments		
Nef(1-33 IIIB)	4H4	y	MGGKWSKSSVVGWPTVRERMR- RAPTVRERMRRAEPAADGVGAA	Nef fusion protein	human(IgG ₁)
			o [Otake et al.(1994)]		
			• 4H4: This Ab could not detect Nef protein on the cell surface; C-term anti-Nef Abs could [Otake et al.(1994)]		
Nef(11-24 BH10)	13/042	y	VGWPTVRERM	rec Nef fragment	murine
			o [Schneider et al.(1991)]		
			• 13/042: Epitope mapped by overlapping decapeptides; core: TVRERM [Schneider et al.(1991)]		
Nef(11-24 BH10)	13/035	y	TVRERMRRAE	rec Nef fragment	murine
			o [Schneider et al.(1991)]		
			• 13/035: Epitope mapped by overlapping decapeptides; core: TVRERM [Schneider et al.(1991)]		
Nef(28-43 BH10)	AM5C6	y	DGVGAASRDLEKGAI	rec Nef fragment	murine
			o [Schneider et al.(1991)]		
			• AM5C6: Epitope mapped by overlapping decapeptides; core: SRDL; also reacts with Nef(78-92) [Schneider et al.(1991)]		
Nef(30-43 BH10)	26/76	y	VGAASRDLEKGAI	rec Nef fragment	murine
			o [Schneider et al.(1991)]		
			• 26/76: Epitope mapped by overlapping decapeptides; core: SRDLEK [Schneider et al.(1991)]		
Nef(30-43 BH10)	25/03	y	VGAASRDLEKGAI	rec Nef fragment	murine
			o [Schneider et al.(1991)]		
			• 25/03: Epitope mapped by overlapping decapeptides; core: ASRDLEK [Schneider et al.(1991)]		
Nef(60-73 BH10)	26/028	y	AQEEEEVGFPVTPQ	rec Nef fragment	murine
			o [Schneider et al.(1991)]		
			• 26/028: Epitope mapped by overlapping decapeptides; core: EEVGFPV [Schneider et al.(1991)]		
Nef(60-73 BH10)	13/058	y	AQEEEEVGFPVTPQ	rec Nef fragment	murine
			o [Schneider et al.(1991)]		
			• 13/058: Epitope mapped by overlapping decapeptides; core: EEVGFP [Schneider et al.(1991)]		

Nef Antibody-Peptide Reactivity

Location	Name	MAb	Peptide	Immunogen	Species(isotype)
			◦ References		
			• Comments		
Nef(78-92 BH10)	AM5C6	y	KAADVDSLHFLK	rec Nef fragment	murine
			◦ [Schneider et al.(1991)]		
			• AM5C6: Epitope mapped by overlapping decapeptides; core: KAAVDL; also reacts with Nef(28-43) [Schneider et al.(1991)]		
Nef(82-103 BH10)	31/03	y	AAVDLSHLKEKGGLGELIHS	rec Nef fragment	murine
			◦ [Schneider et al.(1991)]		
			• 31/03: Epitope mapped by overlapping decapeptides. Mapping suggests complex epitope in this region [Schneider et al.(1991)]		
Nef(148-157 IIIB)	F1	y	VEPDVKVEEAN	?	murine(IgM)
			◦ [Otake et al.(1994), Fujii et al.(1993)]		
Nef(158-206 IIIB)	E9	y	KGENTSLLHPVSLHGMDPAREVL- EWRFDSRLAFHHVARELHPEYFKNC	?	murine(IgM)
			◦ [Otake et al.(1994), Fujii et al.(1993)]		
Nef(192-206 IIIB)	E7	y	HHVARELHPEYFKNC	?	murine(IgM)
			◦ [Otake et al.(1994), Fujii et al.(1993)]		
			• F1, E9 and E7: the C-term end of Nef is accessible to Abs at the cell surface; stained IIIB/M10, but not MN/M10, cells [Otake et al.(1994), Fujii et al.(1993)]		

References

- [Abacioglu et al.(1994)] Y. H. Abacioglu, T. R. Fouts, J. D. Laman, E. Claassen, S. H. Pincus, J. P. Moore, C. A. Roby, R. Kamin-Lewis, & G. K. Lewis. Epitope mapping and topology of baculovirus-expressed HIV-1 gp160 determined with a panel of murine monoclonal antibodies. *AIDS Res. Hum. Retroviruses* **10**:371–381, 1994.
- NOTE: Medline: 94347461 Thirty MAbs were obtained from BALB/c mice immunized with rgp160 LAI expressed in baculovirus. These antibodies map to 4 domains: gp120 C1, C2, C3/V4, and the cytoplasmic tail of gp41. All epitopes were exposed on rgp160 without denaturing the protein, but 6/8 epitopes mapped in gp120 are not exposed unless the protein is denatured, showing rgp160 and rgp120 fold differently.
- [Akerblom et al.(1990)] L. Akerblom, J. Hinkula, P. Brolden, B. Makitalo, T. Fridberger, J. Rosen, M. Villacres-Eriksson, B. Morein, & B. Wahren. Neutralizing cross-reactive and non-neutralizing monoclonal antibodies to HIV-1 gp120. *AIDS* **4**:953–960, 1990.
- [Barbas III et al.(1993)] C. F. Barbas III, T. A. Collet, P. Roben, J. Binley, W. Amberg, D. Hoekstra, D. Cabana, T. M. Jones, R. A. Williamson, G. R. Pilkington, N. L. Haigwood, A. C. Satterthwait, I. Sanz, & D. R. Burton. Molecular profile of an antibody response to HIV-1 as probed by combinatorial libraries. *J Mol Biol* **230**:812–823, 1993.
- [Beretta et al.(1987)] A. Beretta, F. Grassi, M. Pelagi, A. Clivio, C. Parravicini, G. Giovinazzo, F. Andronico, L. Lopalco, P. Verani, S. Butto, F. Titti, G. B. Rossi, G. Viale, E. Ginelli, & A. G. Siccaldi. Hiv env glycoprotein shares a cross-reacting epitope with a surface protein present on activated human monocytes and involved in antigen presentation. *Eur. J. Immunol.* **17**:1793–1798, 1987.
- [Bolmstedt et al.(1990)] A. Bolmstedt, S. Olofsson, E. Sjogren-Jansson, I. Sjoblom, L. Akerblom, J. S. Hansen, & S. Hu. Carbohydrate determinant NeuAc-Gal β (1-4) of N-linked glycans modulates the antigenic activity of human immunodeficiency virus type 1 glycoprotein gp120. *J. Gen. Virol.* **73**:3009–3105, 1990.
- [Bou-Habib et al.(1994)] D. C. Bou-Habib, G. Roderiquez, T. Oravecz, P. W. Berman, P. Lusso, & M. A. Norcross. Cryptic nature of envelope V3 region epitopes protects primary monocyte-tropic human immunodeficiency virus type 1 from antibody neutralization. *J. Virol.* **68**:6006–6013, 1994.
- NOTE: Medline: 94335117 This paper shows that antibodies to the tip of the V3 loop fail to neutralize primary isolate JR-CSF, and that the V3 loop is far more accessible on the JR-CSF derived T-cell tropic strain T-CSF. Anti-V3 antibodies successfully neutralize T-CSF. Weak binding of anti-V3 antibodies to the primary isolate JR-CSF suggests the V3 loop is accessible only in a minor fraction of proteins.

HIV Peptide-Reactive Monoclonal Antibodies

[Broliden et al.(1990)] P. A. Broliden, K. Ljunggren, J. Hinkula, E. Norrby, L. Akerblom, & B. Wahren. A monoclonal antibody to human immunodeficiency virus type 1 which mediates cellular cytotoxicity and neutralization. *J. Virol.* **64**:936–940, 1990.

NOTE: Medline: 90112670.

[Broliden et al.(1991)] P. A. Broliden, B. Makitalo, L. Akerblom, J. Rosen, K. Broliden, G. Utter, M. Jondal, E. Norrby, & B. Wahren. Identification of amino acids in the V3 region of gp120 critical for virus neutralization by human HIV-1 specific antibodies. *Immunology* **73**:371–376, 1991.

[Buchacher et al.(1994)] A. Buchacher, R. Predl, K. Strutzenberger, W. Steinfellner, A. Trkola, M. Purtscher, G. Gruber, C. Tauer, F. Steindl, A. Jungbauer, & H. Katinger. Generation of human monoclonal antibodies against HIV-1 proteins; electrofusion and Epstein-Barr virus transformation for peripheral blood lymphocyte immortalization. *AIDS Res. and Hum. Retroviruses* **10**:359–369, 1994.

NOTE: Medline: 94347460 A panel of 33 human monoclonal antibodies were produced. Linear epitopes for some of this set of MAbs were mapped using peptide ELISA. Linear epitopes were mapped in gp41, and a single epitope was mapped in p24. While multiple gp120 specific MAbs were generated, all seemed to be conformational or carbohydrate dependent, or both.

[Buchacher et al.(1992)] A. Buchacher, R. Predl, C. Tauer, M. Purtscher, G. Gruber, R. Heider, F. Steindl, A. Trkola, A. Jungbauer, & H. Katinger. Human monoclonal antibodies against gp41 and gp120 as potential agents for passive immunization. *Vaccines* **92**:191–195, 1992.

[Cavacini et al.(1993)] L. A. Cavacini, C. L. Emes, J. Power, A. Buchbinder, S. Zolla-Pazner, & M. R. Posner. Human monoclonal antibodies to the V3 loop of HIV-1 gp120 mediate variable and distinct effects on binding and viral neutralization by a human monoclonal antibody to the CD4 binding site. *J. AIDS* **6**:353–358, 1993.

NOTE: Medline: 93204013.

[Chin et al.(1995)] L.-T. Chin, A.-C. Malmborg, K. Kristensson, J. Hinkula, B. Wahren, & C. A. K. Borrebaeck. Mimicking the humoral immune response in vitro results in antigen-specific isotype switching supported by specific autologous T helper cells: generation of human HIV-1-neutralizing IgG monoclonal antibodies from naive donors. *Eur. J. Immunol.* **25**:657–663, 1995.

NOTE: Medline: 95220411.

[Conley et al.(1994)] A. J. Conley, M. K. Gorny, J. A. Kessler II, L. J. Boots, M. Ossorio-Castro, S. Koenig, D. W. Lineberger, E. A. Emini, C. Williams, & S. Zolla-Pazner. Neutralization of primary human immunodeficiency virus type 1 isolates by the broadly reactive anti-V3 monoclonal antibody 447-52D. *J. Virol.* **68**:6994–7000, 1994.

NOTE: Medline: 95018607.

[Cordell et al.(1991)] J. Cordell, J. P. Moore, C. J. Dean, P. J. Klasse, R. A. Weiss, & J. A. McKeating. Rat monoclonal antibodies to nonoverlapping epitopes of human immunodeficiency virus type I gp120 block CD4 binding in vitro. *Virology* **185**:72–79, 1991.

HIV Peptide-Reactive Monoclonal Antibodies

[Croix et al.(1993)] D. A. Croix, H. Y. Yeh, J. Sedlacek, R. B. Luftig, & P. D. Gottlieb. A dominant epitope of HIV-1 protease recognized by hamster monoclonal antibodies. *J. Acq. Immune Def. Synd.* **6**:558–566, 1993.

NOTE: Medline: 93267390.

[DeSantis et al.(1994)] C. DeSantis, L. Lopalco, P. Robbioni, R. Longhi, G. Rappoccio, A. G. Siccardi, & A. Beretta. Human antibodies to immunodominant c5 region of hiv-1 gp120 cross-react with hla class i on activated cells. *AIDS Res. and Hum. Ret.* **10**:157–162, 1994.

[DeVico et al.(1991)] A. L. DeVico, T. D. Copeland, Oroszlan, R. C. Gallo, & M. G. Sarngadharan. Interaction of C-terminal sequences of human immunodeficiency virus reverse transcriptase with template primer. *J Biol Chem* **266**:6774–6779, 1991.

[di Marzo Veronese et al.(1992)] F. di Marzo Veronese, R. Rahman, R. Pal, C. Boyer, J. Romano, V. S. Kalyanaraman, B. C. Nair, R. C. Gallo, & M. G. Sarngadharan. Delineation of immunoreactive, conserved regions in the external envelope glycoprotein of the human immunodeficiency virus type 1. *AIDS Res. Hum. Retroviruses* **8**:1125–1132, 1992.

[di Marzo Veronese et al.(1993)] F. di Marzo Veronese, M. S. Reitz, Jr., G. Gupta, M. Robert-Guroff, C. Boyer-Thompson, A. Louie, R. C. Gallo, & P. Lusso. Loss of a neutralizing epitope by a spontaneous point mutation in the V3 loop of HIV-1 isolated from an infected laboratory worker. *J. Biol. Chem.* **268**:25894–25901, 1993.

NOTE: Medline: 94064668. The Ab M77 cannot neutralize a virus isolated from a IIIB infected lab-worker that has a single point mutation in the defined linear epitope. M77 cannot bind to the mutant native gp120, but can bind to a peptide that carries the substitution.

[Dowbenko et al.(1988)] D. Dowbenko, G. Nakamura, C. Fennie, C. Shimasaki, L. Riddle, R. Harris, T. Gregory, & L. Lasky. Epitope mapping of the immunodeficiency virus type 1 gp120 with monoclonal antibodies. *J. Virol.* **62**:4703–4711, 1988.

[D'Souza et al.(1994)] M. P. D'Souza, S. J. Geyer, C. V. Hanson, R. M. Hendry, G. Milman, & C. Investigators. Evaluation of monoclonal antibodies to HIV-1 envelope by neutralization and binding assays: an international collaboration. *AIDS* **8**:169–181, 1994.

NOTE: Medline: 94318200.

[Duarte et al.(1994)] C. A. Duarte, M. Montero, A. Seralena, R. Valdes, V. Jimenez, J. Benitez, E. Narciandi, J. Madrazo, G. Padron, G. Sanchez, G. Gilljan, K. Persson, S. Ojeda, A. Caballero, A. Miranda, M. C. Dominguez, B. Wahren, & A. Menendez. Multiepitope polypeptide of the HIV-1 envelope induces neutralizing monoclonal antibodies against V3 loop. *AIDS Res. and Hum. Retroviruses* **10**:235–243, 1994.

NOTE: Medline: 94289061.

[Durda et al.(1990)] P. J. Durda, L. Bacheler, P. Clapman, A. M. Jenoski, B. Leece, T. J. Matthews, A. McKnight, R. Pomerantz, M. Rayner, & K. J. Weinhold. HIV-1 neutralizing monoclonal antibodies induced by a synthetic peptide. *AIDS Res and Hum Retroviruses* **6**:1115, 1990.

HIV Peptide-Reactive Monoclonal Antibodies

[Durda et al.(1988)] P. J. Durda, B. Leece, A. M. Jenoski, H. Rabin, A. Fisher, R. Gallo, & F. Wong-Staal. Characterization of murine monoclonal antibodies to HIV-1 induced by synthetic peptides. *AIDS Res and Hum Retroviruses* **4**:331–342, 1988.

[Emini et al.(1992)] E. A. Emini, W. A. Schleif, J. H. Nunberg, A. J. Conley, Y. Eda, S. Tokiyoshi, S. D. Putney, S. Matsushita, K. E. Cobb, C. M. Jett, J. W. Eichberg, & K. K. Murthy. Prevention of HIV-1 infection in chimpanzees by gp120 V3 domain-specific monoclonal antibody. *Nature* **355**:728–730, 1992.

NOTE: Medline: 92158079.

[Evans et al.(1989)] D. J. Evans, J. McKeating, J. M. Meredith, K. L. Burke, K. Katrak, A. John, M. Ferguson, P. D. Minor, R. A. Weiss, & J. W. Almond. An engineered poliovirus chimera elicits broadly reactive HIV-1 neutralizing antibodies. *Nature* **339**:385–388, 1989.

NOTE: Medline: 89262052.

[Ferns et al.(1991)] R. B. Ferns, J. C. Partridge, M. Tisdale, N. Hunt, & R. S. Tedder. Monoclonal antibodies define linear and conformational epitopes of HIV-1 pol gene products. *AIDS Res. Human Retroviruses* **7**:307–313, 1991.

NOTE: Medline: 91291501. 21 anti-RT MAbs were raised and characterized – three narrowly defined linear epitopes were mapped.

[Fujii et al.(1993)] Y. Fujii, Y. Nishino, T. Nakaya, K. Tokunaga, & K. Ikuta. Expression of human immunodeficiency virus type 1 Nef antigen on the surface of acutely and persistently infected human T-cells. *Vaccine* **11**:1240, 1993.

[Fung et al.(1992)] M. S. C. Fung, C. R. Y. Sun, W. L. Gordon, R. Liou, T. W. Chang, W. N. C. Sun, E. S. Daar, & D. D. Ho. Identification and characterization of a neutralization site within the second variable region of human immunodeficiency virus type 1 gp120. *J. Virol.* **66**:848–856, 1992.

NOTE: Medline: 92114188 Two anti-envelope V2 antibodies were raised that neutralize virus in either a conformation dependent (G3-136) and conformation independent (BAT085) manner. G3-136 has diminished reactivity with deglycosylation or DTT reduced gp120, and sCD4 inhibits binding in a competition assay; BAT085 is not sensitive to these alterations in gp120.

[Fung et al.(1990)] M. S. C. Fung, C. R. Y. Sun, R. S. Liou, W. Gordon, N. T. Chang, T.-W. Chang, & N.-C. Sun. Monoclonal anti-idiotypic antibody mimicking the principal neutralization site in HIV-1 gp120 induces HIV-1 neutralizing antibodies in rabbits. *J. Immunol.* **145**:2199–2206, 1990.

NOTE: Medline: 90375916.

[Gorny et al.(1992)] M. K. Gorny, A. J. Conley, S. Karwowska, A. Buchbinder, J.-Y. Xu, E. A. Emini, S. Koenig, & S. Zolla-Pazner. Neutralization of diverse human immunodeficiency virus type 1 variants by an anti-V3 human monoclonal antibody. *J. Virol.* **66**:7538–7542, 1992.

NOTE: Medline: 93059712.

HIV Peptide-Reactive Monoclonal Antibodies

[Gorny et al.(1989)] M. K. Gorny, V. Gianakakos, S. Sharpe, & S. Zolla-Pazner. Generation of human monoclonal antibodies to human immunodeficiency virus. *Proc. Natl. Acad. Sci. USA* **86**:1624–1628, 1989.

NOTE: Medline: 89160828.

[Gorny et al.(1993)] M. K. Gorny, J. Xu, S. Karwowska, A. Buchbinder, & S. Zolla-Pazner. Repertoire of neutralizing human monoclonal antibodies specific for the V3 domain of HIV-1 gp120. *J. Immunol.* **150**:635–643, 1993.

NOTE: Medline: 93123766. Characterizaton of 12 human MAbs that bind and neutralize the MN isolate with 50% neutralization. Two of these antibodies also bound and neutralized IIIB: 447-52-D and 694/98-D; all others could not bind HXB2 peptides. All but two, 418-D and 412-D could bind to SF2 peptides.

[Gorny et al.(1991)] M. K. Gorny, J.-Y. Xu, V. Gianakakos, S. Karwowska, C. Williams, H. W. Sheppard, C. V. Hanson, & S. Zolla-Pazner. Production of site-selected neutralizing human monoclonal antibodies against the third variable domain of the human immunodeficiency virus type 1 envelope glycoprotein. *Proc. Natl. Acad. Sci. USA* **88**:3238–3242, 1991.

NOTE: Medline: 91195328.

[Grassi et al.(1991)] F. Grassi, R. Meneveri, M. Gullberg, L. Lopalco, G. B. Rossi, P. Lanza, C. DeSantis, G. Brattsand, S. Butto, E. Ginelli, A. Berretta, & A. G. Siccardi. Human immunodeficiency virus type 1 gp120 mimics a hidden monomeric epitope borne by class i major histocompatibility complex heavy chains. *J. Exp. Med.* **174**:53–62, 1991.

[Grimison & Laurence(1995)] B. Grimison & J. Laurence. Immunodominant epitope regions of HIV-1 reverse transcriptase: correlations with HIV-1+ serum IgG inhibitory to polymerase activity and with disease progression. *J. Acq. Immune Def. Synd.* **9**:58–68, 1995.

NOTE: Medline: 95227740.

[Grunow et al.(1990)] R. Grunow, R. Giess, T. Portsman, H. Dopel, K. Hansel, & R. von Baehr. Development and biological testing of human and murine antibodies against HIV antigens. *Z. Klin. Med.* **45**:367–369, 1990.

[Haaheim et al.(1991)] L. R. Haaheim, J. P. Maskell, P. Mascagni, & A. R. M. Coates. Fine molecular specificity of linear and assembled antibody binding sites in HIV-1 p24. *Scand. J. Immunol.* **34**:341–350, 1991.

NOTE: Medline: 91352532 Seven murine MAbs to a 104-mer peptide spanning residues 270-373 of p24 gag were generated.

[Hinkula et al.(1990)] J. Hinkula, J. Rosen, V.-A. S. ad T. Stigbrand, & B. Wahren. Epitope mapping of the HIV-1 gag region with monoclonal antibodies. *Mol. Immunol.* **27**:395–403, 1990.

NOTE: Medline: 90309760. Localization of immunogenic domains in p24, p17, and p15. Only the linear epitopes with the best defined binding domains are included (<= 15 amino acids), so only 9 out of the 17 MAbs described in this paper are included here.

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[Ho et al.(1991)] D. D. Ho, M. S. C. Fung, Y. Cao, X. L. Li, C. Sun, T. W. Chang, & N.-C. Sun. Another discontinuous epitope on glycoprotein gp120 that is important in human immunodeficiency virus type 1 neutralization is identified by a monoclonal antibody. *Proc. Natl. Acad. Sci. USA* **88**:8949–8952, 1991.

NOTE: Medline: 92020968.

[Janvier et al.(1990)] B. Janvier, P. Archinard, B. Mandrand, A. Goudeau, & F. Barin. Linear B-cell epitopes of the major core protein of human immunodeficiency virus types 1 and 2. *J Virol* **64**:4258–4263, 1990.

[Kang et al.(1994)] C.-Y. Kang, K. Hariharan, P. L. Nara, J. Sodroski, & J. P. Moore. Immunization with a soluble CD4-gp120 complex preferentially induces neutralizing anti-human immunodeficiency virus type 1 antibodies directed to conformation-dependent epitopes of gp120. *J. Virol.* **68**:5854–5862, 1994.

NOTE: Medline: 94335102. Most of the MAbs generated in this study were conformational, but there were four that bound a V3 loop peptide. These four could neutralize lab strains with different efficiencies. These MAbs were very sensitive to substitutions in the V3 loop, but also to substitutions in the base of the V1/V2 loop structure (120/121 VK/LE), indicating the conformational character of these epitopes.

[Karwowska et al.(1992)] S. Karwowska, M. K. Gorny, A. Buchbinder, V. Gianakakos, C. Williams, T. Fuerst, & S. Zolla-Pazner. Production of human monoclonal antibodies specific for conformational and linear non-V3 epitopes of gp120. *AIDS Res. Human Retroviruses* **8**:1099–1106, 1992.

NOTE: Medline: 92368727. A single linear MAb was generated, to the immunodominant domain in the C-terminal portion of gp120. This antibody did not inhibit rCD4-rgp120 binding or neutralize IIIB or MN. Three conformational epitope binding MAbs were also described in this paper that could neutralize IIIB and MN.

[Keller et al.(1993)] P. M. Keller, B. A. Arnold, A. R. Shaw, R. L. Tolman, F. Van Middlesworth, S. Bondy, V. K. Rusiecki, S. Koenig, S. Zolla-Pazner, P. Conard, E. A. Emini, & A. J. Conley. Identification of HIV vaccine candidate peptides by screening random phage epitope libraries. *Virology* **193**:709–716, 1993.

NOTE: Medline: 93212503. Library of 15 mers were screened for reactivity with 447-52D. 100s of 15 mers reacted, of which 70 were sequenced. All but one contained the motif GPXR.

[Kinney Thomas et al.(1988)] E. Kinney Thomas, J. N. Weber, J. McClure, P. R. Clapham, M. C. Singhal, M. K. Shriver, & R. A. Weiss. Neutralizing monoclonal antibodies to the aids virus. *AIDS* **2**:25–29, 1988.

NOTE: Medline: 88192838.

HIV Peptide-Reactive Monoclonal Antibodies

[Kusk et al.(1992)] P. Kusk, T. H. Bugge, B. O. Lindhardt, E. F. Hulgaard, & K. Holmback. Mapping of linear B-cell epitopes on the major core protein p24 of human immunodeficiency virus type 1. *AIDS Res. Human Retroviruses* **8**:1789–1794, 1992.

NOTE: Medline: 93090461. The epitope for MAb F5-2 was found to be reactive with human sera from HIV-1 infected individuals, and reactivity to this epitope was associated with disease progression and low CD4 T-cell counts.

[Kusk et al.(1988)] P. Kusk, K. Ulrich, J. Zeuthen, & G. Pallesen. Immunological characterization and detection of the major core protein p24 of the human immunodeficiency virus (HIV) using monoclonal antibodies. *J AIDS* **1**:326–332, 1988.

[Kuttner et al.(1992)] G. Kuttner, E. Giessmann, B. Niemann, K. Winkler, R. Grunow, J. Hinkula, J. Rosen, B. Wahren, & R. von Baehr. Immunoglobulin V regions and epitope mapping of a murine monoclonal antibody against p24 core protein of HIV-1. *Mol. Immunol.* **29**:561–564, 1992.

NOTE: Medline: 92227956. The nucleotide sequence of the VDJ_H and VJ_L regions of a murine MAb (CB-mab-p24/13-5) against p24 was obtained.

[Laal et al.(1994)] S. Laal, S. Burda, M. K. Gorny, S. Karwowska, A. Buchbinder, & S. Zolla-Pazner. Synergistic neutralization of human immunodeficiency virus type 1 by combinations of human monoclonal antibodies. *J. Virol.* **68**:4001–4008, 1994.

NOTE: Medline: 9424674 Antibodies to the C-terminal part of gp120 and the V3 loop were shown to act synergistically with anti-CD4 binding site MAbs in terms of neutralization. C-terminal antibodies did not synergize V3 loop MAb neutralization.

[Laman et al.(1992)] J. D. Laman, M. M. Schellekens, Y. H. Abacioglu, G. K. Lewis, M. Tersmette, R. A. M. Fouchier, J. P. M. Langedijk, E. Claassen, & W. J. A. Boersma. Variant-specific monoclonal and group-specific polyclonal human immunodeficiency virus type 1 neutralizing antibodies raised with synthetic peptides from the gp120 third variable domain. *J. Virol.* **66**:1823–1831, 1992.

NOTE: Medline: 92333709.

[Langedijk et al.(1992)] J. P. M. Langedijk, N. K. T. Back, E. Kinney-Thomas, C. Bruck, M. Francotte, J. Goudsmit, & R. H. Meloen. Comparison and fine mapping of both high and low neutralizing monoclonal antibodies against the principal neutralization domain of HIV-1. *Arch. Virol.* **126**:129–146, 1992.

NOTE: Medline: 92398435.

[Liou et al.(1989)] R. S. Liou, E. M. Rosen, M. S. C. Fung, W. N. C. Sun, C. Sun, W. Gordon, N. T. Chang, & T. W. Chang. A chimeric mouse-human antibody that retains specificity for HIV-1 gp120 and mediates the lysis of the HIV-1-infected cells. *J Immunol* **143**:3967–3975, 1989.

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[Lopalco et al.(1993)] L. Lopalco, R. Longhi, F. Ciccomascolo, A. De Rossi, M. Pelagi, F. Andronico, J. P. Moore, T. Schulz, A. Beretta, & A. G. Siccardi. Identification of human immunodeficiency virus type 1 glycoprotein gp120/gp41 interacting sites by the idotypic mimicry of two monoclonal antibodies. *AIDS Res. Human Retroviruses* **9**:33–39, 1993.

NOTE: Medline: 93152284. The MAbs M38 binds to the carboxy terminus of gp120, in a gp41 binding region. This MAbs was used to create an anti-idiotypic MAbs, 9G5A, which can bind to gp41 at the base of the cysteine loop. The binding domains of these two monoclonals are consistent the the C5 domain of gp120 being able to bind to the gp41 cysteine loop. The MAbs M38 also binds to human HLA molecules.

[M. E. White-Scharf et al.(1993)] M. E. White-Scharf, B. J. Potts, L. M. Smith, K. A. Sokolowski, J. R. Rusche, & S. Silver. Broadly neutralizing monoclonal antibodies to the V3 region of HIV-1 can be elicited by peptide immunization. *Virology* **192**:197–206, 1993.

NOTE: Medline: 93297106 Using a V3 loop peptide as immunogen, a panel of 50 anti-V3 neutralizing monoclonal antibodies were generated. Four of them were characterized in detail in this paper.

[Mani et al.(1994)] J.-C. Mani, V. Marchi, & C. Cucurou. Effect of HIV-1 peptide presentation on the affinity constants of two monoclonal antibodies determined by BIACoreTM technology. *Molecular Immunology* **31**:439–444, 1994.

NOTE: Medline: 94239428 Two MAbs are described; one 41-1 did not require the Cys-Cys disulfide bridge and loop formation, the other 9-11 depends on loop formation.

[Matsuo et al.(1992)] K. Matsuo, Y. Nishino, T. Kimura, R. Yamaguchi, A. Yamazaki, T. Mikami, & K. Ikuta. Highly conserved epitope domain in major core protein p24 is structurally similar among human, simian and feline immunodeficiency viruses. *J. Gen. Virol.* **73**:2445–2450, 1992.

NOTE: Medline: 93019072 Two MAbs are described that bind to a highly conserved region in p24, with antigenic conservation between FIV, SIV and HIV-1. The authors suggest this might be an immunodominant domain.

[Matsushita et al.(1988)] S. Matsushita, M. Rober-Guroff, J. Rusche, A. Koito, T. Hattori, H. Hoshino, K. Javaherian, K. Takatsuki, & S. Putney. Characterization of a human immunodeficiency virus neutralizing monoclonal antibody and mapping the neutralizing epitope. *J. Virol.* **62**:2107–2114, 1988.

[McKeating et al.(1993a)] J. A. McKeating, J. Bennett, S. Zolla-Pazner, M. Schutten, S. Ashelford, A. Leigh-Brown, & P. Balfe. Resistance of a human serum-selected human immunodeficiency virus type 1 escape mutant to neutralization by CD4 binding site monoclonal antibodies is conferred by a single amino acid change in gp120. *J. Virol.* **67**:5216–5225, 1993a.

NOTE: Medline: 93323237.

[McKeating et al.(1992a)] J. A. McKeating, J. Cordell, C. J. Dean, & P. Balfe. Synergistic interaction between ligands binding to the CD4 binding site and V3 domain of human immunodeficiency virus type I gp120. *Virology* **191**:732–742, 1992a.

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[McKeating et al.(1992b)] J. A. McKeating, J. P. Moore, M. Ferguson, H. S. Marsden, S. Graham, J. W. Almond, D. J. Evans, & R. A. Weiss. Monoclonal antibodies to the C4 region of human immunodeficiency virus type 1 gp120: use in topological analysis of a CD4 binding site. *AIDS Res. Human Retroviruses* **8**:451–459, 1992b.

NOTE: Medline: 92287630 Antibodies were generated using an antigen poliovirus chimera, expressing aa430-446 of gp120. Results suggest that WQEVGKAMYA may be exposed on the surface of rec gp120.

[McKeating et al.(1993b)] J. A. McKeating, C. Shotton, J. Cordell, S. Graham, P. Balfe, N. Sullivan, M. Charles, M. Page, A. Bolmstedt, S. Olofsson, S. C. Kayman, Z. Wu, A. Pinter, C. Dean, J. Sodroski, & R. A. Weiss. Characterization of neutralizing monoclonal antibodies to linear and conformation-dependent epitopes within the first and second variable domains of human immunodeficiency virus type 1 gp120. *J. Virol.* **67**:4932–4944, 1993b.

NOTE: Medline: 93323237. Substitutions in the V2 loop can result in complete dissociation of gp120 and gp41, suggesting alterations in V2 can affect subunit assembly. Other substitutions allowed gp120-gp41 association and expression, but inhibited viral entry or syncytia. Neutralizing monoclonal antibody G3-4 binding was altered by V2 substitutions.

[Moore et al.(1995a)] J. P. Moore, Y. Cao, L. Qing, Q. J. Sattentau, J. Pyati, R. Koduri, J. Robinson, C. F. B. III, D. R. Burton, & D. D. Ho. Primary isolates of human immunodeficiency virus type I are relatively resistant to neutralization by monoclonal antibodies to gp120, and their neutralization is not predicted by studies with monomeric gp120. *J. Virol.* **69**:101–109, 1995a.

[Moore et al.(1994a)] J. P. Moore, F. E. McCutchan, S.-W. Poon, J. Mascola, J. Liu, Y. Cao, & D. D. Ho. Exploration of antigenic variation in gp120 from clades A through F of human immunodeficiency virus type 1 by using monoclonal antibodies. *J. Virol.* **68**:8350–8364, 1994a. NOTE: Medline: 95056067 Four of five anti-V3 MAbs were slightly cross-reactive within clade B, but not very reactive outside clade B. Two discontinuous CD4 binding site Mabs appear to be pan-reactive. Anti-V2 MAbs were only sporadically reactive inside and outside of clade B.

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[Moore et al.(1994b)] J. P. Moore, Q. J. Sattentau, R. Wyatt, & J. Sodroski. Probing the structure of the human immunodeficiency virus surface glycoprotein gp120 with a panel of monoclonal antibodies. *J. Virol.* **68**:469–484, 1994b.

NOTE: Medline: 94076440. This study compared a large number MAbs that bind to linear epitopes of gp120, and compared binding affinities for: i) native and SDS-DDT denatured gp120, (clone BH10 of the LAI isolate expressed in CHO cells); ii) recombinant gp120 lacking the V1, V2, V3 loops; iii) a panel of 20 mer peptides; iv) a panel of gp120 mutants; and v) oligomeric versus monomeric gp120. The binding ratio of native versus denatured monomeric gp120 is included in the table in this database. These numbers should be considered with the following points in mind: a continuous epitope may be partially exposed on the surface; and a preparation of rgp120 is not homogeneous and contains fully folded, partly denatured, and some completely unfolded species, so the conformation of what is considered to be a native protein will not only reflect fully folded gp120. The authors suggest that a fivefold increase in the affinity for a MAb binding to denatured versus native gp120 indicates that the epitope is inaccessible in the native form. We also have included here information extracted from Moore et al.'s list of the gp120 mutations that reduced the binding of a particular MAb. In mapping of exposed regions of gp120, C2, C3, and C5 domain epitopes were found to bind preferentially to denatured gp120. V1, V2 and V3, part of C4, and the extreme carboxy terminus of C5 were exposed on the native monomer. In the oligomeric form of the molecule, only V2, V3 and part of C4 are well exposed as continuous epitopes.

[Moore et al.(1993a)] J. P. Moore, Q. J. Sattentau, H. Yoshiyama, M. Thali, M. Charles, N. Sullivan, S.-W. Poon, M. S. Fung, F. Traincard, M. Pinkus, G. Robey, J. E. Robinson, D. D. Ho, & J. Sodroski. Probing the structure of the V2 domain of human immunodeficiency virus type 1 surface glycoprotein gp120 with a panel of eight monoclonal antibodies: human immune response to the V1 and V2 domains. *J. Virol.* **67**:6136–6151, 1993a.

NOTE: Medline: 93381817.

[Moore et al.(1993b)] J. P. Moore, M. Thali, B. A. Jameson, F. Vignaux, G. K. Lewis, S.-W. Poon, M. S. Fung, P. J. Durda, L. Akerblom, B. Wahren, D. D. Ho, Q. J. Sattentau, & J. Sodroski. Immunochemical analysis of the gp120 surface glycoprotein of human immunodeficiency virus type 1: Probing the structure of the C4 and V4 domains and the interaction of the C4 domain with the V3 loop. *J. Virol.* **73**:4785–4796, 1993b.

NOTE: Medline: 93323221. General observations: C4 and V3 MAbs are sensitive to the way the epitopes are presented, and this sensitivity cannot be correlated to peptide binding. Some V3-C4 domain interaction was indicated based on mutation and interference studies.

[Moore et al.(1995b)] J. P. Moore, A. Trokla, B. Korber, L. J. Boots, J. A. Kessler II, F. E. McCutchan, J. Mascola, D. D. Ho, J. Robinson, & A. J. Conley. A human monoclonal antibody to a complex epitope in the V3 region of gp120 of human immunodeficiency virus type 1 has broad reactivity within and outside clade B. *J. Virol.* **69**:122–130, 1995b.

NOTE: The epitope was defined as including amino acids on both sides of the loop of the V3 loop: -I—G-FY-T, where the G is the second G of the GPGT tip of the loop. This antibody bound well to gp120 molecules from clades A,B,C,E, and F, when the critical amino acids were present. Binding did not parallel neutralization however; 19b could produce a 50-fold reduction of infectivity in some primary B isolates, and in C clade isolates at low virus input concentrations, but not in isolates from all clades where binding could occur (A,E, and F).

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[Moore et al.(1994c)] J. P. Moore, R. L. Willey, G. K. Lewis, J. Robinson, & J. Sodroski. Immunological evidence for interactions between the first, second and fifth conserved domains of the gp120 surface glycoprotein of human immunodeficiency virus type 1. *J. Virol.* **68**:6836–6847, 1994c.

NOTE: Medline: 95018590. Mutation 267N/Q in C2 abnormally exposes the carboxy-terminal end gp120.

[Moore et al.(1994d)] J. P. Moore, R. L. Willey, G. K. Lewis, J. Robinson, & J. Sodroski. Immunological evidence for interactions between the first, second, and fifth conserved domains of the gp120 surface glycoprotein of human immunodeficiency virus type 1. *J. Virol.* **68**:6836–6847, 1994d.

NOTE: Medline: 95018590.

[Muster et al.(1995)] T. Muster, B. Ferko, A. Klima, M. Purtscher, A. Trokla, P. Schulz, A. Grassauer, O. G. Englehard, A. Garcia-Sastre, P. Palese, & H. Katinger. Mucosal model of immunization against human immunodeficiency virus type 1 with a chimeric influenza virus. *J. Virol.* **69**:6678–6686, 1995.

[Muster et al.(1994)] T. Muster, R. Guinea, A. Trokla, M. Purtscher, A. Klima, F. Steindl, P. Palese, & H. Katinger. Cross-neutralization activity against divergent human immunodeficiency virus type 1 isolates induced by the gp41 sequence ELDKWAS. *J. Virol.* **68**:4031–4034, 1994.

[Muster et al.(1993)] T. Muster, F. Steindl, M. Purtscher, A. Trkola, A. Klima, G. Himmller, F. Ruker, & H. Katinger. A conserved neutralizing epitope on gp41 of human immunodeficiency virus type 1. *J. Virol.* **67**:6642–6647, 1993.

NOTE: Medline: 94016848 Peptides containing the amino acid sequence LDKWAS or DKWASL showed reduced reactivity. The peptides LELEDKW and KWASLW showed no significant reaction. These data suggest that the epitope of the MAb 2F5 comprises the amino acid sequence ELDKWA, with DKWA being the core sequence.

[Nakamura et al.(1992)] G. R. Nakamura, R. Byrn, K. Rosenthal, J. P. Porter, M. R. Hobbs, L. Riddle, D. J. Eastman, D. Dowbenko, T. Gregory, B. M. Fendly, & P. W. Berman. Monoclonal antibodies to the extracellular domain of HIV-1 IIIB gp160 that neutralize infectivity, block binding to CD4, and react with diverse isolates. *AIDS Res. Human Retroviruses* **8**:1875–1885, 1992.

NOTE: Medline: 93143997.

[Nakamura et al.(1993)] G. R. Nakamura, R. Byrn, D. M. Wilkes, J. A. Fox, M. R. Hobbs, R. Hastings, H. C. Wessling, M. A. Norcross, B. M. Fendly, & P. W. Berman. Strain specificity and binding affinity requirements of neutralizing monoclonal antibodies to the C4 domain of gp120 from human immunodeficiency virus type 1. *J. Virol.* **67**:6179–6191, 1993.

NOTE: Medline: 93381821 Multiple CD4 binding domain antibodies are described; only one has a linear peptide reactivity (13H8). A V3 loop binding antibody is also described (1026).

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[Nara et al.(1990)] P. L. Nara, L. Smit, N. Dunlop, W. Hatch, M. Merges, D. Waters, J. Kelliher, R. C. Gallo, P. J. Fischinger, & J. Goudsmit. Emergence of viruses resistant to neutralization by V3-specific antibodies in experimental human immunodeficiency virus type 1 IIIB infection of chimpanzees. *J. Virol.* **64**:3779–3791, 1990.

NOTE: Medline: 90317876.

[Neurath & Strick(1990)] A. R. Neurath & N. Strick. Confronting the hypervariability of an immunodominant epitope eliciting virus neutralizing antibodies from the envelope glycoprotein of the human immunodeficiency virus type 1. *Mol. Immunol.* **27**:539–549, 1990.

NOTE: Medline: 92017917.

[Niedrig et al.(1992)] M. Niedrig, H.-P. Harthus, M. Broker, H. Bickhard, G. Pauli, H. R. Gelderblom, & B. Wahren. Inhibition of viral replication by monoclonal antibodies directed against human immunodeficiency virus gp120. *J. Gen. Virol.* **73**:2451–2455, 1992.

NOTE: Medline: 93019073.

[Niedrig et al.(1991)] M. Niedrig, J. Hinkula, H. Harthus, M. Broker, L. Hopp, G. Pauli, & B. Wahren. Characterization of murine monoclonal antibodies directed against the core proteins of human immunodeficiency virus types 1 and 2. *J. Virol.* **65**:4529–4533, 1991.

NOTE: Medline: 91303716 Multiple anti-HIV p24 MAbs were generated using HIV-1 IIIB p24 or HIV-2 ROD p26 as immunogens. The epitopes for these MAbs were mapped, and the cross-reactivity between HIV-1 IIIB, HIV-2 ROD and SIV MAC antigens were compared using multiple antibody binding assays. While some of the antibodies raised were cross-reactive by some or all of the assays, (ELISA, WB, immunofluorescence, immunoprecipitation and alkaline phosphatase anti-alkaline phosphatase assay), the different assays often gave different results. Only the antibodies raised to HIV-1 IIIB p24 are included in this database.

[Niedrig et al.(1989)] M. Niedrig, J. Hinkula, W. Weigelt, J. L'Age-Stehr, G. Pauli, J. Rosen, & B. Wahren. Epitope mapping of monoclonal antibodies against human immunodeficiency virus type 1 structural proteins by using peptides. *J. Virol.* **63**:3525–3528, 1989.

NOTE: Medline: 89311648 Multiple linear MAb epitopes were described in p24 and p17. Several MAbs were able to react with HIV-2 ROD and SIV MAC in an immunoblot assay, as well as with HIV-1.

[Niedrig et al.(1988)] M. Niedrig, J.-P. Rabanus, J. L. Stehr, H. R. Gelderblom, & G. Pauli. Monoclonal antibodies directed against human immunodeficiency virus gag proteins with specificity for conserved epitopes in HIV-1, HIV-2 and simian immunodeficiency virus. *J. Gen. Virol.* **69**:2109–2114, 1988.

[Ohlin et al.(1992)] M. Ohlin, J. Hinkula, P.-A. Brolden, R. Grunow, C. A. K. Borrebaeck, & B. Wahren. Human MoAbs produced from normal, HIV-1-negative donors and specific for glycoprotein gp120 of the HIV-1 envelope. *Clin. Exp. Immunol.* **89**:290–295, 1992.

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[Ohno et al.(1991)] T. Ohno, M. Terada, Y. Yoneda, K. W. Shea, R. F. Chambers, D. M. Stroka, M. Nakamura, & D. W. Kufe. A broadly neutralizing monoclonal antibody that recognizes the V3 region of human immunodeficiency virus type 1 glycoprotein gp120. *Proc. Natl. Acad. Sci. USA* **88**:10726–10729, 1991.

NOTE: Medline: 92073360.

[Orvell et al.(1991)] C. Orvell, T. Unge, R. Bhikhambhai, K. Backbro, U. Ruden, B. Strandberg, B. Wahren, & E. M. Fenyo. Immunological characterization of the human immunodeficiency virus type 1 reverse transcriptase protein by the use of monoclonal antibodies. *J Gen Virol* **72**:1913–1918, 1991.

[Otake et al.(1994)] K. Otake, Y. Fujii, Y. Nishino, Q. Zhong, K. Fujinaga, M. Kameoka, K. Ohki, & K. Ikuta. The carboxyl-terminal region of HIV-1 nef protein is a cell surface domain that can interact with CD4+ T cells. *J. Immunol.* **153**:5826–5837, 1994.

NOTE: Medline: 95081631 This study shows that the C-terminal end of Nef is accessible to Abs. This domain could bind in a soluble form to CD4+, uninfected cells, and this interaction is inhibited in the presence of the C-terminal specific antibodies. Syncytium formation was reduced by these Abs or peptides. Ab's could stain IIIB/M10, but not MN/M10, infected cells, in a membrane immunofluorescence assay.

[Papsidero et al.(1989)] L. D. Papsidero, M. Sheu, & F. W. Ruscetti. Human immunodeficiency virus type 1-neutralizing monoclonal antibodies which react with p17 core protein: characterization and epitope mapping. *J. Virol.* **63**:267–272, 1989.

NOTE: Medline: 89068840 Two Mabs with overlapping binding sites on p17 reduced the infectivity of free virus. A p24 monoclonal was not able to do this.

[Pinter et al.(1993a)] A. Pinter, W. J. Honnen, M. E. Racho, & S. A. Tilley. A potent, neutralizing human monoclonal antibody against a unique epitope overlapping the CD4-binding site of HIV-1 gp120 that is broadly conserved across North American and African virus isolates. *AIDS Res. Human Retroviruses* **9**:985–996, 1993a.

NOTE: Medline: 94107600.

[Pinter et al.(1993b)] A. Pinter, W. J. Honnen, & S. A. Tilley. Conformational changes affecting the V3 and CD4-binding domains of human immunodeficiency virus type 1 gp120 associated with env processing and with binding of ligands to these sites. *J. Virol.* **67**:5692–5697, 1993b.

NOTE: Medline: 93353654.

[Pirofski et al.(1993)] L. Pirofski, E. K. Thomas, & M. D. Scharff. Variable region gene utilization and mutation in a group of neutralizing murine anti-human immunodeficiency virus type 1 principal neutralizing determinant antibodies. *AIDS Res Human Retroviruses* **9**:41–49, 1993.

NOTE: Medline: 93152285 Observed restricted subset of murine V heavy and light chain gene elements in a set of 5 antibodies that bind to the tip of the V3 loop.

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[Poumbourios et al.(1992)] P. Poumbourios, D. A. McPhee, & B. E. Kemp. Antibody epitopes sensitive to the state of human immunodeficiency virus type 1 gp41 oligomerization map to a putative alpha-helical region. *AIDS Res. Human Retrov.* **8**:2055–2062, 1992.

NOTE: Medline: 93152279.

[Purtscher et al.(1994)] M. Purtscher, A. Trkola, G. Gruber, A. Buchacher, R. Preidl, F. Steindl, C. Tauer, R. Berger, N. Barrett, A. Jungbauer, & H. Katinger. A broadly neutralizing human monoclonal antibody against gp41 of human immunodeficiency virus type 1. *AIDS Research and Human Retroviruses* **10**:1651–1658, 1994.

NOTE: Medline: 95194731.

[Robert-Guroff et al.(1994)] M. Robert-Guroff, A. Louie, M. Myagkikh, F. Michaels, M. P. Kieny, M. E. White-Scharf, B. Potts, D. Grogg, & M. S. Reitz Jr. Alteration of V3 loop context within the envelope of human immunodeficiency virus type 1 enhances neutralization. *J. Virol.* **68**:3459–3466, 1994.

NOTE: Medline: 94246688 MN-V3 loop inserted into a HBX2 background results in enhanced neutralization of anti-MN V3 MAbs 50.1 and human HIV+ sera when the chimeric virus was compared MN. Enhanced affinity, and greater proportions of labeled infected H9 cells by FACS analysis, were also observed using two anti-MN V3 MAbs, 50.1 and 83.1.

[Robert-Hebmann et al.(1992a)] V. Robert-Hebmann, S. Emiliani, F. Jean, M. Resnicoff, & C. Devaux. Clonal analysis of murine B-cell response to the human immunodeficiency virus type 1 (HIV-1)-gag p17 and p25 antigens. *Mol. Immunol.* **29**:729–738, 1992a.

[Robert-Hebmann et al.(1992b)] V. Robert-Hebmann, S. Emiliani, M. Resnicoff, F. Jean, & C. Devaux. Subtyping of human immunodeficiency virus isolates with a panel of monoclonal antibodies: identification of conserved and divergent epitopes on p17 and p25 core proteins. *Mol. Immunol.* **29**:1175–1183, 1992b.

NOTE: Medline: 92408665.

[Safrit et al.(1993)] J. T. Safrit, M. S. C. Fung, C. A. Andrews, D. G. Braun, W. N. C. Sun, T. W. Chang, & R. A. Koup. hu-PBL-SCID mice can be protected from HIV-1 infection by passive transfer of monoclonal antibody to the principal neutralizing determinant of envelope gp120. *AIDS* **7**:15–21, 1993.

NOTE: Medline: 93183427.

[Sattentau et al.(1993)] Q. J. Sattentau, J. P. Moore, F. Vignaux, F. Traincard, & P. Poignard. Conformational changes induced in the envelope glycoproteins of the human and simian immunodeficiency viruses by soluble receptor binding. *J Virol* **67**:7383–7393, 1993.

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[Sattentau et al.(1995)] Q. J. Sattentau, S. Zolla-Pazner, & P. Poignard. Epitope exposure on functional, oligomeric HIV-1 gp41 molecules. *Virology* **206**:713–717, 1995.

NOTE: Most gp41 epitopes are masked when associated with gp120 on the cell surface. Weak binding of anti-gp41 MAbs can be enhanced by treatment with sCD4.

[Schneider et al.(1991)] T. Schneider, H. Harthus, P. Heldebrandt, M. Niedrig, M. Broker, W. Weigelt, A. Beck, & G. Pauli. Epitopes of the HIV-1-negative factor reactive with murine monoclonal antibodies and human HIV-1-positive sera. *AIDS Res. Human Retroviruses* **7**:37–43, 1991.

NOTE: Medline: 91197564. Epitopes for 9 murine MAbs were mapped, and found to be located in 4 immunogenic regions. 7/10 sera from HIV-1 positive individuals reacted to the four nef immunogenic regions.

[Scott Jr et al.(1990)] C. F. Scott Jr, S. Silver, A. T. Profy, S. D. Putney, A. Langlois, K. Weinhold, & J. E. Robinson. Human monoclonal antibody that recognizes the V3 region of human immunodeficiency virus gp120 and neutralizes the human T-lymphotropic virus type IIIMN strain. *Proc. Natl. Acad. Sci. USA* **87**:8597–8601, 1990.

NOTE: Medline: 91046042.

[Shang et al.(1991)] F. Shang, H. Huang, K. Revesz, H.-C. Chen, R. Herz, & A. Pinter. Characterization of monoclonal antibodies against the human immunodeficiency virus matrix protein, p17gag: identification of epitopes exposed at the surfaces of infected cells. *J. Virol.* **65**:4798–4804, 1991.

NOTE: Medline: 91333022. Six MAbs with linear epitopes were mapped. These Abs could only bind to HIV-infected cells that had been permeabilized with acetone. Only G11g1 and G11h3, two antibodies that did not bind to peptides, but only to intact p17, could react with live HIV-1 infected cells. These antibodies were not neutralizing.

[Shotton et al.(1995)] C. Shotton, C. Arnold, Q. Sattentau, J. Sodroski, & J. A. McKeating. Identification and characterization of monoclonal antibodies specific for polymorphic antigenic determinants within the V2 region of the human immunodeficiency virus type 1 envelope glycoprotein. *J. Virol.* **69**:222–230, 1995.

NOTE: Medline: 95074868. Anti-V2 linear and conformation dependent MAbs were studied. All V2 Abs studied could bind IIIB, but failed to neutralize non-clonal stocks. Epitope exposure is different in rgp120 compared to native gp120.

[Skinner et al.(1988)] M. A. Skinner, R. Ting, A. J. Langlois, K. J. Weinhold, H. K. Lyerly, K. Javaherian, & T. J. Matthews. Characteristics of a neutralizing monoclonal antibody to the HIV envelope glycoprotein. *AIDS Res. Hum. Retroviruses* **4**:187–197, 1988.

NOTE: Medline: 88281280.

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[Sullivan et al.(1993)] N. Sullivan, M. Thali, C. Furman, D. Ho, & J. Sodroski. Effect of amino acid changes in the v2 region of the human immunodeficiency virus type 1 gp120 glycoprotein on subunit association, syncytium formation, and recognition by a neutralizing antibody. *J. Virol.* **67**:3674–3679, 1993.

NOTE: Medline: 93267832.

[Sun et al.(1989)] N. C. Sun, D. D. Ho, C. R. Y. Sun, R.-S. Liou, W. Gordon, M. S. C. Fung, X. L. Li, R. C. Ting, T.-H. Lee, N. T. Chang, & T. W. Chang. Generation and characterization of monoclonal antibodies to the putative CD4-binding domain of human immunodeficiency virus type 1 gp120. *J. Virol.* **63**:3579–3585, 1989.

NOTE: Medline: 89342591.

[Szilvay et al.(1992)] A. M. Szilvay, S. Nornes, I. R. Haugan, L. Olsen, V. R. Prasad, C. Endresen, S. P. Goff, & D. E. Helland. Epitope mapping of HIV-1 reverse transcriptase with monoclonal antibodies that inhibit polymerase and RNase H activities. *J. AIDS* **5**:647–657, 1992.

NOTE: Medline: 92309178. 20 MAbs are described, only five are able to bind to short peptides. These five MAbs are insensitive to mutations through out the rest of RT.

[Tanchou et al.(1994)] V. Tanchou, T. Delaunay, H. de Rocquigny, M. Bodeus, J.-L. Darlix, B. Roques, & R. Benarous. Monoclonal antibody-mediated inhibition of RNA binding and annealing activities of HIV type 1 nucleocapsid protein. *AIDS Res. and Hum. Retroviruses* **10**:983–993, 1994.

NOTE: Medline: 95110646.

[Tatsumi et al.(1990)] M. Tatsumi, C. Devaux, F. Kourilsky, & J. C. Chermann. Characterization of monoclonal antibodies directed against distinct conserved epitopes of human immunodeficiency virus type 1 core proteins. *Molec cell Biochem* **96**:127–136, 1990.

[Thiriart et al.(1989)] C. Thiriart, M. Francotte, J. Cohen, C. Collignon, A. Delers, S. Kummert, C. Molitor, D. Gilles, P. Roelants, F. Van Wijnendaele, M. De Wilde, & C. Bruck. Several antigenic determinants exposed on the gp120 moiety of HIV-1 gp160 are hidden on the mature gp120. *J. Immunol.* **143**:1832–1836, 1989.

NOTE: Medline: 89381316.

[Tilley et al.(1992)] S. A. Tilley, W. J. Honnen, M. E. Racho, T.-C. Chou, & A. Pinter. Synergistic neutralization of HIV-1 by human monoclonal antibodies against the V3 loop and the CD4-binding site of gp120. *AIDS Res. Human Retroviruses* **8**:461–467, 1992.

NOTE: Medline: 92287631.

[Tisdale et al.(1988)] M. Tisdale, P. Ertl, B. A. Larder, D. J. M. Purifoy, G. Darby, & K. L. Powell. Characterisation of human immunodeficiency virus type 1 reverse transcriptase by using monoclonal antibodies: role of the C terminus in antibody reactivity and enzyme function. *J Virol.* **62**:3662–3667, 1988.

HIV Peptide-Reactive Monoclonal Antibodies

[Trokla et al.(1995)] A. Trokla, A. B. Pomales, H. Yuan, B. Korber, P. J. Maddon, G. P. Allaway, H. Katinger, C. F. B. III, D. R. Burton, D. D. Ho, & J. P. Moore. Cross-clade neutralization of primary isolates of human immunodeficiency virus type 1 by human monoclonal antibodies and tetrameric CD4-IgG. *J. Virol.* **69**:6609–6617, 1995.

NOTE: Three MAbs, IgG1b12, and 2G12, and 2F5 tetrameric CD4-IgG2 were tested for their ability to neutralize primary isolates from clades A-F. 2F5 and CD4-IgG2 were able to neutralize within and outside clade B with a high potency. IgG1b12 and 2G12 could potently neutralize isolates from within clade B, but showed a reduction in efficacy outside of clade B. 2F5 neutralization was dependent on the presence of the sequence: LDKW.

[Tyler et al.(1990)] D. S. Tyler, S. D. Stanley, S. Zolla-Pazner, M. K. Gorny, P. P. Shadduck, A. J. Langlois, T. J. Matthews, D. P. Bolognesi, T. J. Parker, & K. J. Weinhold. Identification of sites within gp41 that serve as targets for antibody-dependent cellular cytotoxicity by using human monoclonal antibodies. *J. Immunol.* **145**:3276–3282, 1990.

NOTE: Medline: 91036969.

[VanCott et al.(1994)] T. C. VanCott, F. R. Bethke, V. R. Polonis, M. K. Gorny, S. Zolla-Pazner, R. R. Redfield, & D. L. Birx. Dissociation rate of antibody-gp120 binding interactions is predictive of V3-mediated neutralization of HIV-1. *J. Immunol.* **153**:449–459, 1994.

NOTE: Medline: 94267254 Using surface plasmon resonance it was found that the rate of the dissociation of the MAb-gp120 complex, but not the association rate, correlated with MAbs ability to neutralize homologous virus (measured by 50% inhibition of p24 production). Association constants were similar for all MAbs tested, varying less than 4-fold. Dissociation rate constants were quite variable, with 100-fold differences observed.

[Vella et al.(1993)] C. Vella, M. Ferguson, G. Dunn, R. Meloen, H. Langedijk, D. Evans, & P. D. Minor. Characterization and primary structure of a human immunodeficiency virus type 1 (hiv-1) neutralization domain as presented by a poliovirus type 1/hiv-1 chimera. *J Gen Virol* **7**:15–21, 1993.

NOTE: This study elaborated on a set of antibodies first reported in Evans et al., 1989. Not all of the neutralization results are congruent between the studies. The antibodies in this study were raised to a region including the cytoplasmic domain of gp41 inserted into a poliovirus type 1/HIV-1 chimera.

[Warrier et al.(1994)] S. V. Warrier, A. Pinter, W. J. Honnen, M. Girard, E. Muchmore, & S. A. Tilley. A novel, glycan-dependent epitope in the V2 domain of human immunodeficiency virus type 1 gp120 is recognized by a highly potent, neutralizing chimpanzee monoclonal antibody. *J. Virol.* **68**:4636–4642, 1994.

NOTE: Medline: 94267927.

HIV Peptide-Reactive Monoclonal Antibodies

[Wu et al.(1995)] Z. Wu, S. C. Kayman, W. Honnen, K. Revesz, H. Chen, S. V. Warrier, S. A. Tilley, J. McKeating, C. Shotten, & A. Pinter. Characterization of neutralization epitopes in the V2 region of human immunodeficiency virus type 1 gp120: role of glycosylation in the correct folding of the V1/V2 domain. *J. Virol.* **69**:2271–2278, 1995.

NOTE: Most epitopes based only on numbering. Medline: 95191000.

[Wyatt et al.(1992)] R. Wyatt, M. Thali, S. Tilley, A. Pinter, M. Posner, D. Ho, J. Robinson, & J. Sodroski. Relationship of the human immunodeficiency virus type 1 gp120 third variable loop to elements of the CD4 binding site. *J. Virol.* **66**:6997–7004, 1992.

NOTE: Medline: 93059644.

[Xu et al.(1991)] J. Xu, M. K. Gorny, T. Palker, S. Karwowska, & S. Zolla-Pazner. Epitope mapping of two immunodominant domains of gp41, the transmembrane protein of human immunodeficiency virus type 1, using ten human monoclonal antibodies. *J. Virol.* **65**:4832–4838, 1991.

NOTE: Medline: 91333026.

[Yoshiyama et al.(1994)] H. Yoshiyama, H. Mo, J. P. Moore, & D. D. Ho. Characterization of mutants of human immunodeficiency virus type 1 that have escaped neutralization by monoclonal antibody G3-4 to the gp120 V2 loop. *J. Virol.* **68**:974–978, 1994.

[Zolla-Pazner et al.(1995)] S. Zolla-Pazner, J. O'Leary, S. Burda, M. K. Gorny, M. Kim, J. Mascola, & F. McCutchan. Serotyping of primary human immunodeficiency virus type 1 isolates from diverse geographic locations by flow cytometry. *J. Virol.* **69**:3807–3815, 1995.

NOTE: Medline: 95264474. A set of 13 human MAbs to a variety of epitopes were tested against a panel of primary isolates of HIV-1, representing different genetic clades. The V3 loop tended to be B clade restricted, and a single gp120 C terminus binding antibody was clade specific. Two other gp120 C terminus binding antibodies were group specific.